STUDY

Requested by the TRAN Committee

European Parliament

Aviation Sector Strategic Action Plan

Final Report

Policy Department for Transport, Employment and Social Affairs
Directorate-General for Cohesion, Agriculture and Social Policies (CASP)
Author: STEER

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EN

Aviation Sector Strategic Action Plan

Final Report

Abstract

This study examines the **competitiveness of the EU aviation sector** both internally and versus comparator third countries, highlighting its **current strengths and weaknesses** and **likely future developments**. The study encompasses the entire aviation value chain and includes an assessment of the **working conditions** in the sector. It identifies a set of **recommendations paving the way towards a strategic action plan for the EU aviation sector**, which aim to **maintain and improve the competitiveness of EU aviation** in the medium- to long-term.

This document was requested by the European Parliament's Committee on Transport and Tourism.

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LIST OF ABBREVIATIONS

ACC	Area Control Centre
ACI	Airports Council International
ACMI	Aircraft, Crew, Maintenance, and Insurance
ADP	Aéroports de Paris (Groupe ADP)
AENA	Aeropuertos Españoles y Navegación Aérea (Spanish Airports and Air Navigation)
A4E	Airlines for Europe
AI	Artificial Intelligence
ANS	Air Navigation Services
ANSP	Air Navigation Service Provider
ASD EUROPE	Aerospace, Security and Defence Industries Association of Europe
ATAG	Air Transport Action Group
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATFM	Air Traffic Flow Management
CAJU	Clean Aviation Joint Undertaking
CAPEX	Capital Expenditure
CDG	Paris-Charles de Gaulle Airport
CEF	Connecting Europe Facility
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
DAA	Dublin Airport Authority
D/E	Debt to Equity Ratio
DEN	Denver International Airport
DFS	Deutsche Flugsicherung (German Air Traffic Control)
DHMI	Devlet Hava Meydanları İşletmesi (Turkish State Airports Authority)

DSCR	Debt Service Coverage Ratio
EASA	European Union Aviation Safety Agency
EBIT	Earnings Before Interest and Tax
EC	European Commission
ECA	European Cockpit Association
EEA	European Economic Area
EIB	European Investment Bank
E-SAF	Synthetic aviation fuel
ETF	European Transport Workers' Federation
EU	European Union
EU ETS	European Union Emissions Trading System
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAB	Functional Airspace Block
FCO	Rome Fiumicino Airport
FID	Final Investment Decision
FRA	Frankfurt Airport
FSC	Full-Service Carrier
FTE	Full-Time Equivalent
GDP	Gross Domestic Product
GHSP	Ground Handling Service Provider
GSE	Ground Service Equipment
GVA	Gross Value Added
HEFA	Hydrotreated Esters and Fatty Acids
IAG	International Airlines Group
IATA	International Air Transport Association

ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
ITA	Italia Trasporto Aereo
JFK	John F. Kennedy International Airport, New York
JU	Joint Undertaking
KLM	Koninklijke Luchtvaart Maatschappij (Royal Dutch Airlines)
LCC	Low-Cost Carrier
LHR	London Heathrow Airport
LGS	Latvijas Gaisa Satiksme (Latvian Air Traffic)
LGW	London Gatwick Airport
LPS	Letové prevádzkové služby Slovenskej republiky (Air Traffic Services of the Slovak Republic)
LTAG	Long Term Aspirational Goal
LVNL	Luchtverkeersleiding Nederland (Air Traffic Control Netherlands)
MRV	Monitoring, Reporting and Verification
MUAC	Maastricht Upper Area Control Centre
MUC	Munich Airport
NATS	National Air Traffic Services
OAG	Official Airline Guide
OMV	Austrian oil, gas, and petrochemical company
ORD	Chicago O'Hare International Airport
PPE	Property, Plant, and Equipment
PRB	Performance Review Board
PRC	Performance Review Commission
R&D	Research and Development
RAG	Red-Amber-Green

RED	Renewable Energy Directive
ROA	Return on Assets
ROCE	Return on Capital Employed
ROE	Return on Equity
SAF	Sustainable Aviation Fuel
SAS	Scandinavian Airlines System
SES	Single European Sky
SESAR	Single European Sky ATM Research
SME	Small and Medium-sized Enterprise
STEM	Science, Technology, Engineering and Mathematics
TBO	Trajectory-Based Operations
UAE	United Arab Emirates
UAS	Unmanned Aircraft System
UCO	Used cooking oil
UK	United Kingdom
UNI	UNI Global Union
USA	United States of America
VAT	Value Added Tax
WASG	Worldwide Airport Slot Guideline

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EXECUTIVE SUMMARY

KEY FINDINGS

The EU has a large and mature aviation sector with a well-developed, competitive intra-EU aviation market benefitting consumers.

The EU aerospace industry is among the world's leaders, but faces a need to ensure its strategic autonomy by securing access to critical raw materials and leveraging civil-military synergies.

The EU aviation sector has a high level of climate ambition. This increases costs for EU airlines compared to non-EU competitors, although there is mixed evidence on whether decarbonisation policies lead to traffic diversion to non-EU airports. Policy options to minimise the cost impact should be considered within the existing decarbonisation framework.

SAF production capacity in the EU is significant, but there is currently no commercial production of synthetic aviation fuel (e-SAF). In this nascent industry there is an opportunity for the EU to achieve a leading position in SAF and e-SAF production in the medium- to long-term.

New technologies (i.e. electric/hydrogen aircraft, advanced air mobility, new air traffic management concepts, AI) offer potential benefits to the competitiveness of EU aviation; public investment could help achieve them.

Working conditions vary by industry, with strengths in aerospace and weaknesses in ground handling. Skills and labour shortages could be addressed through employment strategies to support the sector's attractiveness and boost competitiveness.

Study objectives

The competitiveness of the EU economy is a key element in the economic agenda for the EU, guided by the Draghi report on the future of EU competitiveness in 2024. This study assesses the current and future **competitiveness of the EU aviation sector** across its value chain (airlines, airports, aerospace, air navigation services, ground handling and aviation fuel), highlighting **strengths, threats, and opportunities**, **comparisons** with third country competitors, and an **assessment of working conditions**.

Competitiveness of the EU aviation sector

The EU aviation sector has several ***competitive strengths***. Notably, the EU single aviation market provides an **efficient internal market** and has lowered barriers to entry for airlines and fares for consumers. The **EU aerospace sector is among the world's leaders** in civil and military applications, with several world-leading firms and an extensive supply chain positively contributing to the EU economy and supporting its strategic autonomy. The EU's SAF production industry is also strong, representing around 20% of global production in 2024 with production forecast to grow rapidly by 2030.

In addition, the EU's aviation regulatory acquis is mature and more developed than in many third countries in providing a competitive EU aviation sector. EU external aviation policy aims to increase connectivity based on **reciprocity** and a **level playing field** between Member States and non-EU partners. Fair competition clauses and regulations (2019/712) are intended to support the achievement of these aims, although their use and effectiveness is unclear.

The EU aviation sector also faces ***threats to its competitiveness***. Evolving global challenges (e.g. strong civil-military synergies in the USA, access to raw materials, and geopolitical developments) mean that boosting the aerospace industry's **strategic autonomy** is relevant to ensure a sovereign and autonomous Europe, reduce dependencies on third countries, and support the industry's ability to innovate and remain competitive.

The EU aviation sector has a **high level of climate ambition** relative to third countries. While this presents an opportunity for the EU to lead the way in decarbonising aviation, the differing levels of ambition lead to **higher costs for EU carriers** from complying with EU decarbonisation policy such as ReFuelEU Aviation and the EU Emissions Trading System (ETS).

Evidence is mixed on whether EU decarbonisation policies cause a diversion in air traffic to non-EU airports. The policies are estimated to increase costs for flights via EU hubs and for flights within the EEA by an estimated EUR 7.57 per passenger in 2025 (Steer, 2025[1]). However, research (Transport & Environment, 2022) has shown that the diversion to non-EU hubs is not always significant due to mitigating factors (i.e. longer routings and higher operating costs).

Other threats include **high energy costs in the EU,** which are around **twice as high** as in the USA and China. This increases production costs for both the energy-intensive EU aerospace and SAF production industries and impacts their cost competitiveness globally.

EU carriers cannot overfly Russian airspace due to EU sanctions imposed in 2022, but Chinese carriers can. **EU carriers on routes to/from China** must fly longer routes, increasing costs and causing longer journey times. Since these restrictions began in 2022, market share for EU carriers on routes analysed to China decreased by between -3 and -29 percentage points. There is little recourse for the EU to remedy this competitive distortion.

Working conditions in the EU aviation sector vary; the aerospace industry is highly skilled and well-remunerated, while the ground handling industry features low-paid, manual work with poorer working conditions. There are some **skills and labour shortages** (in aerospace, air navigation services, and ground handling), while a minority of employees in the airline industry use atypical employment forms which can lead to poorer working conditions for staff and lower costs for airlines. Ensuring the attractiveness of the aviation sector with sufficient skills underpins its competitiveness.

There are also ***opportunities*** to **maintain and improve competitiveness**, including leading the way in the decarbonisation of the aviation sector. Given the **importance of SAF to decarbonisation, the EU could aim to achieve a leading role in its production**, creating economies of scale to lower prices and boost EU competitiveness. SAF currently represents 0.3% of total aviation fuel production globally and the EU relies on imported feedstocks. **Securing long-term access to SAF feedstocks** will increase the resilience of production and boost the competitiveness of SAF producers.

The EU could also aim for a leading role in the commercialisation of **synthetic aviation fuel (e-SAF)**, given the sub-mandate for synthetic aviation fuel in ReFuelEU Aviation. There is currently **no commercial production in the EU** due to high costs and financial risk for private investors; measures

[1] The data to calculate the per-passenger cost of compliance is not published in the Steer (2025) report, but was shared by its authors to be included in this study.

to de-risk investments such as revenue certainty mechanisms and double-sided auctions may be beneficial to leverage this opportunity.

Finally, **technological developments** such as electric or hydrogen aircraft propulsion technology, the use of artificial intelligence, and new air traffic management concepts could help to **maintain and improve the EU aviation sector's competitiveness** in the medium- to long-term future. These opportunities to boost competitiveness could be supported through public funding and, in the case of AI, adaptations to regulatory frameworks to allow its benefits to diffuse through the sector safely.

Study recommendations

The study makes a number of recommendations, including to:

- **Consider** SAF policy options that may mitigate cost disadvantages for EU carriers and boost their competitiveness within the frameworks of ReFuelEU Aviation and EU ETS.
- **Ensure** feedstock supply for SAF is resilient across the EU, mitigating supply risks, as well as supporting the production of SAF and e-SAF within the EU.
- **Develop** an aerospace strategy to promote this important sector, notably ensuring the sector's ongoing access to critical resources and supporting the synergies between civil and military aerospace technology.
- **Address** high energy costs faced by the EU aerospace and SAF production industries to reduce the cost differential versus third country competitors.
- **Assess** fair competition clauses and their use in ensuring a level playing field in aviation, identifying best practices.
- **Develop** aviation-specific skills policies for industries which are strategically important (aerospace) or which face skills and labour shortages (air navigation services, ground handling).
- **Leverage** opportunities to boost future competitiveness with public funding for new technologies in aviation, including new technological concepts in air traffic management, innovation funding to develop new propulsion technologies, use of AI, and commercial e-SAF production to reduce financial risks for private investors.

1. INTRODUCTION

1.1. Background

The EU aviation sector provided 2 million jobs in 2023, contributing EUR 760 billion GVA, which represented 7.3% of the wider EU economy, taking into account all economic impacts. It is therefore an important economic sector, and one which is, furthermore, subject to significant international competition.

In 2024, Mario Draghi published a landmark report on the future of European competitiveness. The report focused on the challenges that the European economy faced in remaining competitive on the global stage. In the aviation sector, the Draghi report highlighted specific challenges including high costs of decarbonisation, potential for business diversion to regions outside the EU's frontiers, access to feedstocks for sustainable aviation fuels, sustainable aviation fuel production capacity, high risk in financing decarbonisation solutions, and a lack of full EU autonomy along the aeronautical supply chain.

While it identifies several areas where EU policy could act to boost the competitiveness of the aviation sector, the Draghi report is not targeted specifically at the aviation sector. A comprehensive analysis of the competitiveness of the EU aviation sector is required to provide policymakers with recommendations with the aim to maintain and improve the EU aviation sector's competitiveness.

1.2. Study objectives

This study analyses the current competitiveness of the EU aviation sector across the entire value chain, including airlines, airports, aerospace firms, air navigation service providers, ground handling service providers and aviation fuel suppliers. It compares the degree of competitiveness within the EU aviation sector against major third country comparators to identify strengths and areas where competitiveness could be improved. This study considers likely future scenarios and the potential impacts these might have on the future competitiveness of the EU aviation sector. The report also assesses the working conditions in the EU aviation sector by industry and links to competitiveness. Finally, it provides recommendations to maintain or improve the competitiveness of the EU aviation sector. These could pave the way for an EU aviation sector strategic action plan.

The study does not reflect the impacts of recent developments in the Middle East in 2026, which are still evolving at the time of writing.

1.3. Methodology

The report uses publicly available data, research, and information to form the basis of the findings. As part of the study, a range of stakeholders (listed below) were interviewed for their insights; these interviews guided the research process through identifying key areas of focus, as well as information that is not published but was shared via interview.

- **Airlines –** International Air Transport Association (IATA), Airlines for Europe (A4E)
- **Airports –** Airports Council International (ACI) EUROPE
- **Air Navigation Services –** EUROCONTROL
- **Aviation fuel –** FuelsEurope
- **Aerospace –** Aerospace, Security and Defence Industries Association of Europe (ASD Europe), Rolls-Royce

- **Regulator –** DG MOVE
- **Workers' representatives –** European Transport Workers' Federation (ETF)

The aviation sector consists of several distinct industries, each with its own characteristics, specifically:

- **Airlines** (offering passenger and/or freight air transport services).
- **Airports** (ranging widely in size between very large hubs and small regional airports).
- **Aerospace** (manufacturing aircraft, aircraft engines, avionics, cabin equipment).
- **Air Navigation Service Providers** (ANSPs, providing air traffic management services).
- **Ground handlers** (providing airport services such as baggage handling, fuelling, catering); and
- **Fuel suppliers** (supplying aviation fuel to aerodromes).

This report considers the economic contribution of each of these industries (or groupings thereof).

For the economic analysis, a range of companies within each industry were selected to gain a representative level of coverage. Companies were selected based on a range of the EU's geographies, company sizes and business models, and the public availability of data such as company financial reports. Companies in comparator third countries were also selected on the same basis. This is described in Annex A.

For international comparisons, third countries (listed below) most relevant to the aviation sector were selected, with different rationales and focusing on different aviation industries. Not all comparator third countries are analysed for all industries, because some industries do not compete with third countries (air navigation services, ground handling) and some countries compete only in certain industries in particular (i.e. Canada and Brazil for aerospace; Türkiye, Qatar, and the United Arab Emirates (UAE) for airlines and airports).

- **United States of America** (USA) (major aviation market, also a major aerospace producer).
- **China** (very large market rapidly developing).
- **Türkiye** (major market close to the EU strongly competing for certain air traffic flows).
- **United Arab Emirates** (UAE – home to two major airlines and their hub airports providing competition on routes to Asia, Africa and Australasia).
- **Qatar** (home to a major airline and its hub airport providing competition on routes to Asia, Africa and Australasia).
- **Canada** (important aerospace producer); and
- **Brazil** (important aerospace producer).

1.4. Definition of competitiveness and competitiveness drivers

The International Civil Aviation Organisation (ICAO), the United Nations agency for international aviation, has developed a working definition of aviation competitiveness as "the framework under which a country's economic, aero-political, financial, and regulatory structures and policies interact to allow market forces and the competition they produce to maximise market output, economic efficiencies, and productivity" (ICAO, 2023). Draghi (2024) (p.13) states that the aim of stimulating competitiveness is important to "raise productivity growth, which is the most important driver of long-term growth and leads to rising standards of living over time".

ICAO (2023) defined five drivers of competitiveness ('pillars'), each of which must be considered in assessing the competitiveness of the aviation sector: **economic, aero-political, financial, regulatory, and infrastructure**. This study considers these competitiveness drivers in assessing the competitiveness of the EU aviation sector and developed criteria for assessing each driver, shown in Figure 1.1. The competitiveness drivers and subheadings are adapted from the ICAO document in order to better match the scope of this study, notably respecifying the fifth driver as **infrastructure & resources** to cover human resources (i.e. working conditions and the attractiveness of the sector) and access to raw materials and critical resources (i.e. for aerospace and SAF production).

Figure 1.1: Competitiveness drivers

Economic driver	Aero-political driver	Financial driver	Regulatory driver	Infrastructure & resources driver
• Macroeconomic metrics (jobs, GVA) • Market size • Market structure • Air connectivity	• Air services agreements • Ownership and control rules • Political factors (Russian airspace restrictions) • Strategic autonomy	• Profitability • Access to capital	• Aviation acquis • Environmental/ decarbonisation policy • Competition policy	• Human resources • Aviation infrastructure • Production capacity • Access to raw materials and critical resources • Technological developments

Source: Steer adaptation of ICAO, 2023.

1.5. Structure of the report

The structure of this report is as follows:

- **Chapter 2** assesses the current economic performance of the EU aviation sector.
- **Chapter 3** provides a comparative assessment of the EU aviation sector with third countries.
- **Chapter 4** assesses the working conditions in the EU aviation sector.
- **Chapter 5** analyses in-depth the competitiveness of the EU aviation sector taking account of all the competitiveness drivers set out in Figure 1.1; and
- **Chapter 6** summarises the findings and presents recommendations for a strategic action plan for the EU aviation sector to maintain or improve competitiveness.
- **Annex A** provides details of the methodology for the financial analysis in Chapter 2 and 3 and presents the detailed charts for each industry analysed.
- **Annex B** provides a summary of the regulatory environment that the EU and third country comparators operate within.

2. ASSESSMENT OF CURRENT ECONOMIC PERFORMANCE OF THE EU AVIATION SECTOR

KEY FINDINGS

The EU aviation sector generated EUR 174 billion in Gross Value Added (GVA) in 2023, providing 2 million jobs. This rises to EUR 760 billion GVA, representing 7.3% of the wider EU economy considering indirect (supply chain) and induced (spending by employees in the wider economy) impacts.

Aviation is a high value sector, with each job generating EUR 130,000 of GVA in the EU economy, compared with an average of EUR 88,000 per job across all EU jobs (+48% higher).

EU27 air passenger volumes reached 1.05 billion in 2024, +2% higher than in 2019. Passenger volumes in 2024 were +28% higher than in 2015, while freight volumes, at 14.6 million tonnes in 2024, were +15% higher than in 2015.

EU aerospace companies delivered over 1,150 aircraft in 2024, and the European aerospace industry generated revenues of over EUR 100 billion.

The six industries of the aviation sector (airlines, airports, aerospace, air navigation service providers, ground handlers and aviation fuel suppliers) all have different market structures, with different levels of internal and external competition. Airlines and aerospace companies face the greatest level of global competition.

Among those for which meaningful comparisons can be made, airports are the industry with the highest level of profitability and access to capital within the aviation sector, followed by aerospace companies and then airlines.

2.1. Introduction

This chapter describes the current economic performance of the EU aviation sector and provides a factual overview to facilitate understanding of the current state of the sector. As this chapter covers the current economic performance, it focuses on the **economic** and **financial** drivers of competitiveness described in section 1.4. and includes a description of:

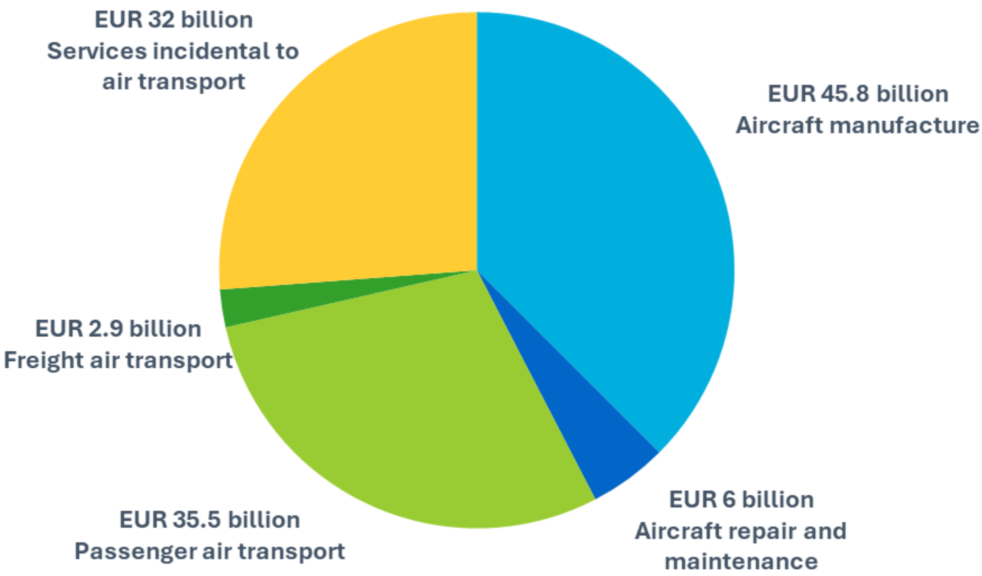
- the contribution that the EU aviation sector makes to the EU economy as a whole.
- the size and growth of the aviation market in the EU over the past 10 years.
- an assessment of the market structure in each industry of the EU aviation sector; and
- the financial performance of selected entities in each industry of the aviation sector.

This chapter provides a **comprehensive assessment** of the current economic performance of the EU aviation sector. It also provides important contextual information for the subsequent **comparative assessment** of the current economic performance of the EU aviation sector versus third country comparators (covered in Chapter 3) and the detailed analysis of the competitiveness of the EU aviation sector (covered in Chapter 5).

2.2. Economic contribution of the aviation sector to the EU economy

Air transport is a key contributor to the EU economy; figures from the Eurostat Structural Business Statistics (SBS) database[2] show that aviation contributed EUR 122 billion to EU GDP in 2023[3]. Figure 2.1 shows the sector is relatively balanced between aerospace, passenger and freight air transport (airlines), and "services incidental to air transport" (comprised of the airport, air navigation services, and ground handling industries). Data on aviation fuel was not possible to isolate from the Eurostat dataset (sbs_ovw_act) and is not included in the data.

Figure 2.1: Value added by aviation industry in the EU, 2023



Source: Eurostat Structural Business Statistics (SBS) database.

Similarly, Aviation Benefits Beyond Borders (2024), a study commissioned by Air Transport Action Group (ATAG – an industry body formed of major trade associations and organisations across the aviation sector), estimated that in 2023 the aviation sector directly employed 2 million people in the EU and made a direct economic contribution of EUR 174 billion to GDP. The study examined the direct, indirect, induced, and catalytic economic impacts[4] of the aviation industry on the EU economy, which are standard metrics for assessing the economic contribution of different sectors. Including these non-

[2] Dataset sbs_ovw_act.

[3] Calculated by summing the 2023 "Value added – million euro" figures for all EU countries for the following industries in the SBS database: (i) Manufacture of air and spacecraft and related machinery; (ii) Repair and maintenance of aircraft and spacecraft; (iii) Passenger air transport; (iv) Freight air transport; and (v) Service activities incidental to air transportation. Simplified category labels are used in the chart for readability. As noted, data on aviation fuel was not available separately and is therefore not presented.

[4] Direct impacts: refer to the economic activity generated directly by airlines, airports, on-site airport activities, ANSPs, and civil aerospace. Indirect impacts: refer to the aviation sector supply chain such as fuel, food and beverages, construction, manufacturing, and services (accounting, IT, etc.) Induced impacts: refer to the spending of direct and indirect employees of the aviation sector in the rest of the economy from their income (i.e. on housing, food, clothing, leisure, services, etc.). Catalytic impacts: refer to the benefits that the aviation sector has on other sectors and businesses in the economy (such as stimulating tourism demand and spending by tourists in the economy). Non-tourism catalytic impacts (known as "other catalytic") are not quantified in the study.

direct economic impacts, the study estimates that the aviation sector employed 9.3 million people in the EU in 2023 and made an economic contribution of EUR 760 billion.

This EUR 174 billion figure from the ATAG study, estimating the direct GDP generated by aviation, is greater than the EUR 122 billion figure calculated from the Eurostat Structural Business Statistics (SBS) database, as this EUR 122 billion figure does not include commercial operations at airports (such as retail, food and beverages, and real estate).

Based on a total 2023 GVA across all EU industries of EUR 10,460 billion[5], the direct impacts of aviation are therefore calculated to comprise 1.2% - 1.7% of the EU economy[6]; including all the non-direct impacts estimated in the ATAG study, this rises to 7.3%[7].

In addition, the Eurostat Structural Business Statistics (SBS) database data also shows that the average GVA per full-time employee (GVA per FTE - a measure of the productivity of employees in a sector) in 2023 was almost 50% higher in the EU aviation sector than the EU average, the GVA per FTE across the EU economy was EUR 87,921, whereas the GVA per FTE for the EU aviation sector was EUR 130,327.

2.3. Size and growth of the aviation market, 2015-2024

This section looks at the size outputs of the aviation sector, passenger and freight traffic, and aircraft/aircraft engine production. It does not consider the economic activity of airports, ANSPs, ground handling or fuel suppliers, which provide services supporting the activities of airlines and aerospace companies, rather than products consumed outside the industry.

2.3.1. Passenger traffic

a. Current Market Overview

In 2024, data from Eurostat (2025) shows that the total number of air passengers[8] across the EU27 reached 1.05 billion, slightly higher than the pre-pandemic levels of 1.03 billion passengers in 2019.

As illustrated in Figure 2.2 there are significant differences among Member States in the distribution of domestic, intra-EU, and extra-EU air traffic. Notably, domestic air travel is particularly prominent in countries such as Spain and Italy, where geographic factors, such as its area and the presence of islands, make air transport a more common mode for internal mobility.

Intra-EU and extra-EU markets represent 36% and 49% of total traffic respectively in 2024, while the remaining 15% of demand is from domestic routes. The volume of extra-EU demand is strongly influenced by the presence of major international hubs in the EU. For example, due to Amsterdam's role as a major international airport hub, the Netherlands handles a higher number of extra-EU passengers than Greece or Portugal, while all three countries have close to similar total passenger volumes.

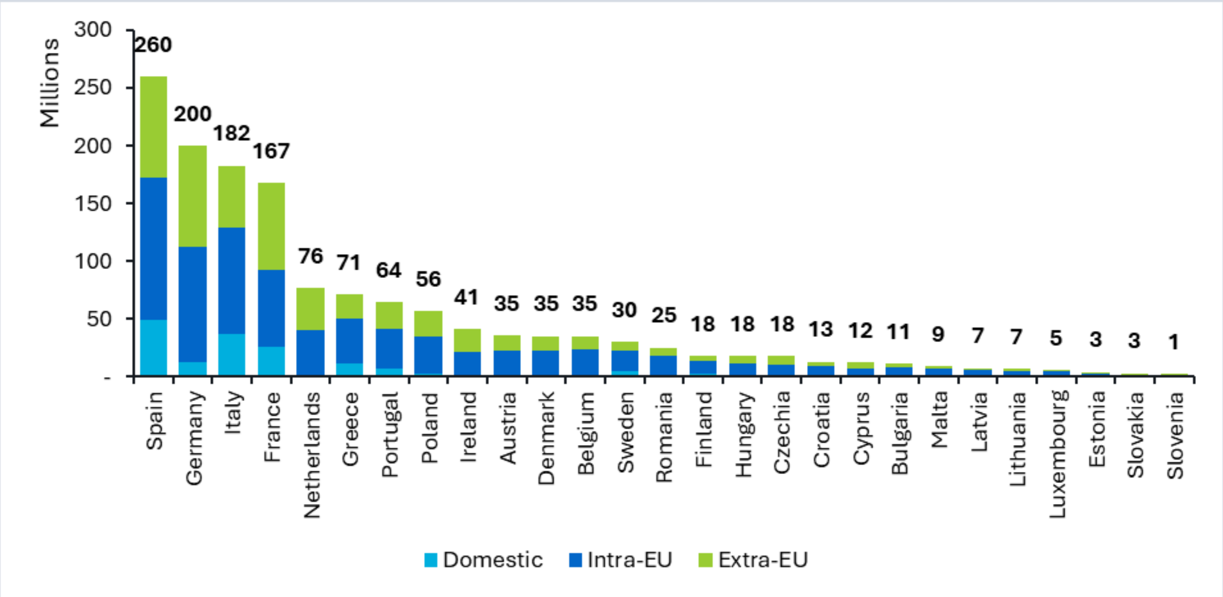
[5] The 2023 "Value added – million euro" figure for all EU countries for "Industry, construction and market services (except public administration and defence; compulsory social security; activities of membership organisations)".

[6] 1.2% = EUR 122 billion / EUR 10,460 billion; 1.7% = EUR 174 billion / EUR 10,460 billion.

[7] 7.3% = EUR 760 billion / EUR 10,460 billion.

[8] Defined as passengers flown on flights arriving or departing from EU airports. Note this is different from data based on passenger arrivals and departures from EU airports, which effectively counts passengers on intra-EU routes twice (once departing, once arriving at EU airport). Passengers on extra-EU flights are only counted once under either method.

Figure 2.2: Number of passengers by Member State in 2024, split by market



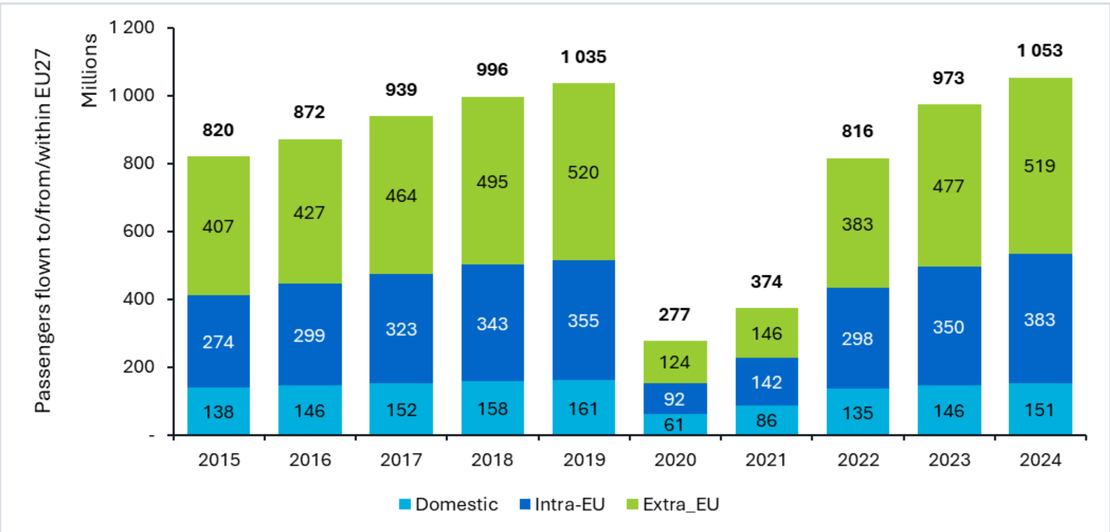
Source: Steer analysis of [Eurostat [avia_paoc]](https://ec.europa.eu/eurostat/databrowser/view/avia_paoc).

b. Historical Trends

Over the past 10 years, European air traffic has grown by 28.5% despite smaller increases in the number of flights (7.7% growth since 2015) indicating a higher average number of passengers per flight (Eurostat, 2025).

Figure 2.3 shows that in 2024, domestic traffic has lagged behind intra-EU and extra-EU growth (Eurostat, 2025), reflecting stricter limits on domestic flights in France (-31.0% versus 2015, -31.2% versus 2019) and post-pandemic policies promoting rail travel for domestic journeys in Germany (Steer, 2023) (-49.0% versus 2015, -49.1% versus 2019), two of the largest aviation markets in the EU.

Figure 2.3: Passengers trends in EU, split by domestic/intra-EU/extra-EU



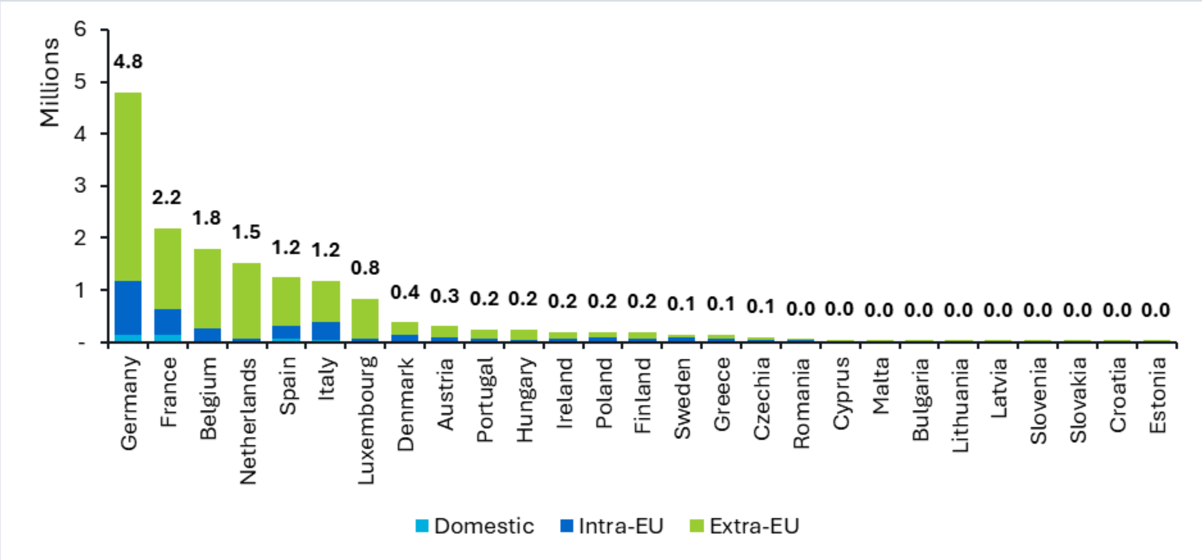
Source: Steer analysis on Eurostat [avia_paoc].

2.3.2. Air cargo traffic

a. Current Market Overview

Air cargo traffic (freight and mail transport) is also strategically important to Europe's economy; air cargo supports efficient supply chains and international trade (IATA, 2024). Given its higher cost relative to other modes of cargo transport, it often supports the movement of time-sensitive goods and high-value items. Figure 2.4 shows that in 2024, the volume of air cargo transported by air across the EU-27 reached 14.6 million tonnes. Germany alone accounted for around one third of this total (Eurostat, 2025).

Figure 2.4: Air cargo volumes by Member State in 2024, split by domestic/intra-EU/extra-EU

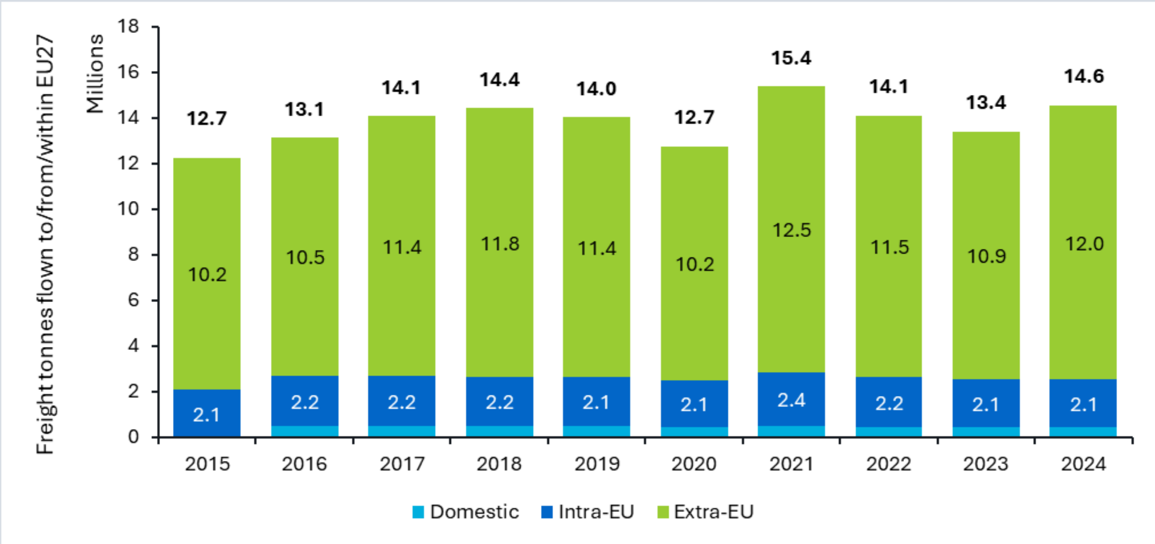


Source: Steer analysis on Eurostat [avia_gooc].

b. Historical Trends

Over the past 10 years, the volume of air cargo flown across the EU-27 has fluctuated between 13 and 15 million tonnes; across the 2015-2024 period air cargo volumes grew by +15.0%. The extra-EU segment consistently dominates the market, accounting for more than 83% of total freight throughput (Figure 2.5). Domestic air cargo traffic has fallen, while intra-EU volumes have remained relatively stable. Air cargo has been only marginally affected by the impacts of the pandemic and experienced growth in 2021, which represents a contrast to the trends observed for passenger traffic in Figure 2.3.

Figure 2.5: Air cargo volume trend in EU, split by domestic/intra-EU/extra-EU



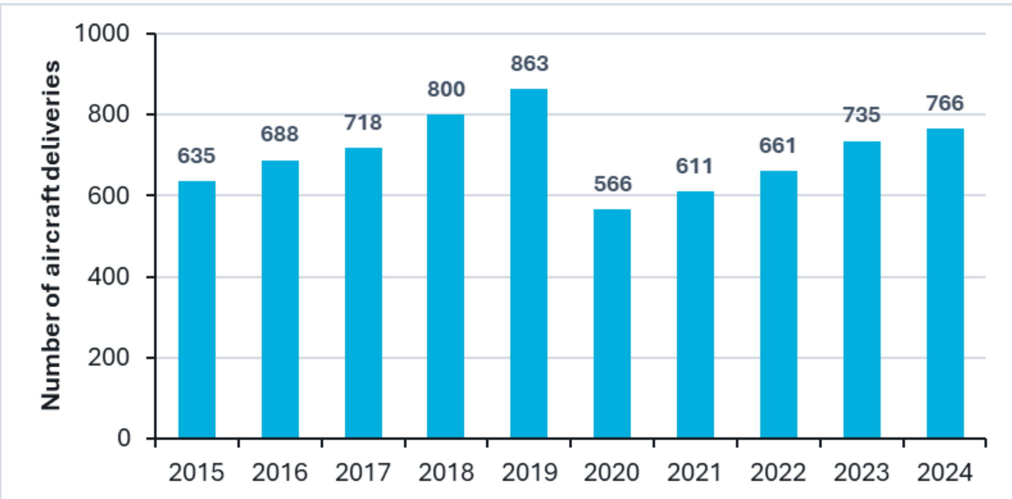
Source: Steer analysis on Eurostat [avia_gooc].

2.3.3. Aerospace

There are three key aircraft manufacturers in Europe; Airbus, which produces commercial and non-commercial aircraft (including helicopters), BAE Systems, and Dassault (both produce non-commercial aircraft). In 2024, Airbus recorded nearly EUR 70 billion in revenue (Airbus, 2025), while BAE Systems (2025) recorded over EUR 33.4 billion[9] and Dassault Aviation (2025) over EUR 5.4 billion.

In terms of the total active commercial aircraft fleet, Airbus aircraft represented approximately 40% of the global fleet in 2025 with 12,234 aircraft (IATA, 2025). In terms of aircraft deliveries, Airbus delivered 766 aircraft in 2024 according to its own data (Airbus, 2026). The number of deliveries achieved over the past 10 years is presented in Figure 2.6 below. Dassault Aviation delivered over 50 aircraft (Dassault Aviation, 2025). Information on BAE Systems aircraft deliveries was not available.

Figure 2.6: Number of Airbus aircraft deliveries, 2015-2024



Source: Airbus.

[9] 1 EUR = 0.84662 GBP.

2.4. Market structure

This section reviews the market structure of each of the aviation market industries identified in section 1.3, in particular as this impacts the competitive positioning of the industry. Where relevant, it considers the level of market concentration within Europe for the industry as well as the relationship to the global market (considered in more depth in Chapter 3). For airlines, whose geographic reach is fundamental to their competitive positioning, it also looks at the connectivity they provide for passengers.

2.4.1. Airlines

a. Airline characteristics

Similarly to other world regional markets, the European market has developed two distinct airline business models. Prior to the advent of the Single European Aviation Market in 1993 (Regulations EEC 2407/92, 2408/92, 2409/92, commonly referred to as the "Third Package"), airline access within the EU was governed by bilateral agreements between Member States, and were characterised by limited levels of service and high prices. The Single Market led to significant growth and lower fares for consumers, with the rise of "Low-Cost Carriers" (LCCs) offering a more basic product and lower fares than the traditional "Full-Service Carriers" (FSCs) (European Commission, 2020). The 1992 Regulations have been updated and are currently set out in Regulation EC 1008/2008 (the Air Services Regulation), maintaining the freedoms for EU carriers to fly anywhere in the intra-EU aviation market.

Whereas LCCs typically offer only point-to-point services between airports, with only a basic service included in a single cabin class (and additional charges for baggage, on-board catering, etc.), FSCs typically allow journeys including connections at intermediate airports, with more services included or available, including premium cabins (e.g. Premium Economy, Business and First class), on-board meals and airport lounges. However, the two models have become less distinct over time, with FSCs sometimes also "unbundling" services such as meals and hold baggage for economy class, while some LCCs allow connections at some airports.

According to Steer analysis of Official Airline Guide (OAG) Schedules Analyser data[10], LCCs represented 43% of the EU market in 2024 in terms of departing seats from the EU27, with the three largest LCCs (Ryanair, easyJet, and Wizz Air) together representing 29% of all departing seats (and 69% of LCC departing seats). In addition to these large, independent LCCs, other airlines using an LCC model include Vueling (part of the IAG group), Eurowings (part of the Lufthansa group) and Transavia (part of the Air France-KLM group).

In addition to the growth of LCCs, another global development has been the rise of airline alliances, driven by restrictions on mergers between airlines in different jurisdictions (discussed below in section 5.2.4.a), which allows FSCs to combine services and achieve economies of scale without transgressing ownership and control rules applicable to airlines in their respective jurisdictions. The European airline market is also strongly shaped by the presence of the three global alliances which play a central role in defining connectivity patterns, competitive dynamics, and customer value propositions:

- **Star Alliance**, which includes Lufthansa, Austrian Airlines, SWISS, and TAP Air Portugal among its main EU members, is the largest alliance worldwide in terms of both carriers and destinations, also including Turkish Airlines and non-European carriers such as United Airlines, Singapore Airlines and Air China.

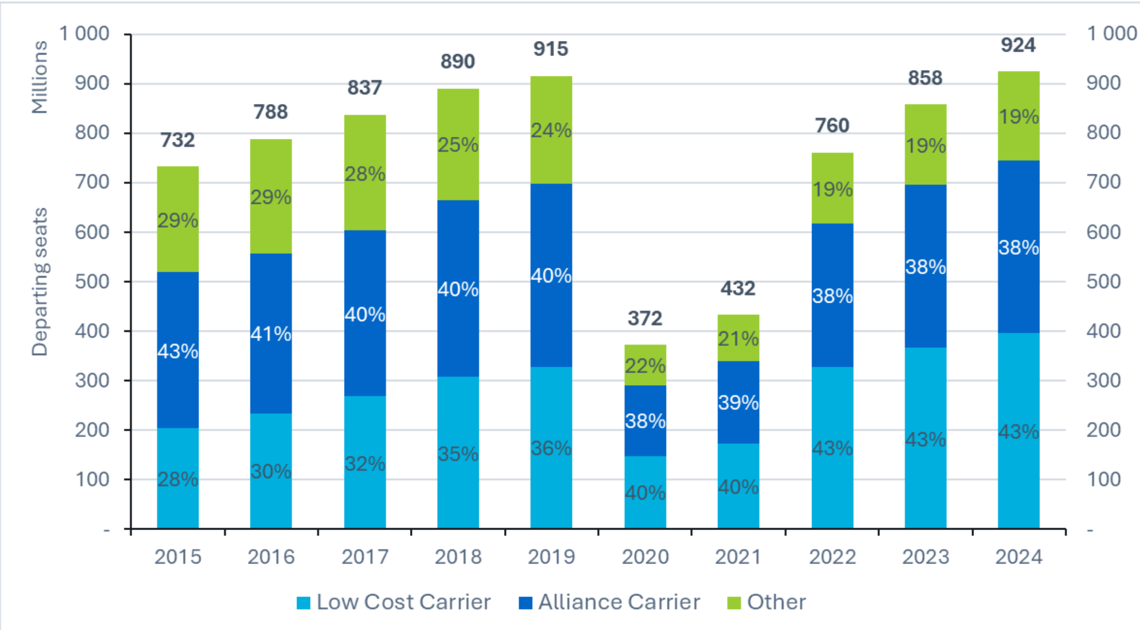
[10] NB: OAG Schedules Analyser data is proprietary and not available to the public free of charge.

- **SkyTeam**, with key EU members players such as Air France, KLM, SAS, Tarom and Air Europa, as well as Virgin Atlantic and non-European carriers such as Delta Airlines, Saudia, China Eastern and Korean Air.
- **Oneworld**, incorporating the IAG airline group's major FSC members Iberia and British Airways, as well as Finnair and Aer Lingus in Europe, and non-European carriers such as American Airlines, Cathay Pacific, Japan Airlines, Qatar Airways and Qantas.

Outside of the LCCs and alliance members, there remain a number of other, generally smaller, carriers operating a variety of models, ranging from full service towards lower cost.

Figure 2.7 shows the evolution of each of the categories of airline since 2015 (in terms of departing seats from EU airports) and highlighting the increasing size of the LCC sector in Europe, which has expanded mainly at the expense of the "other" category of airlines. The alliance airlines have grown in absolute terms since 2015, although now represent a smaller percentage of the total seats offered. Overall, the EU airline offer had fully recovered from COVID by 2024 (+1% vs. 2019), although only the LCC volumes were higher than in 2019 (+21%), with alliance airlines' seats -6% lower and "other" carriers -17% lower.

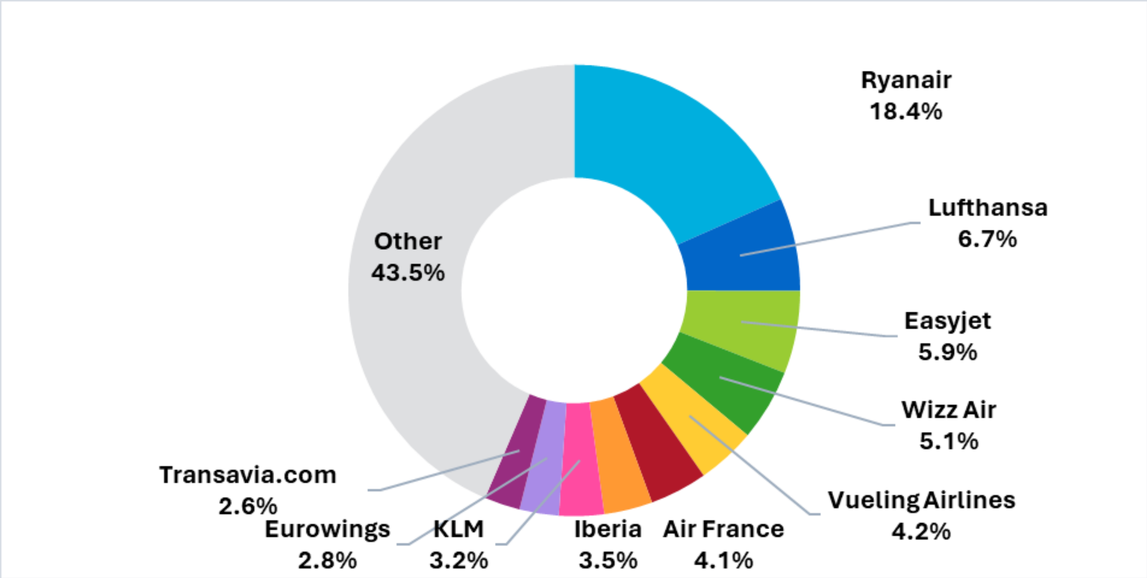
Figure 2.7: Departing seats from EU27 Member States by airline category



Source: Steer analysis of Official Aviation Guide (OAG) data.

In terms of individual airlines, the top 10 airlines in Europe represented 56.5% of the total volume of departing seats from the EU27 and include a mix of LCCs (Ryanair, easyJet, Wizz Air, Vueling, Eurowings, Transavia) and FSCs (Lufthansa, Air France, Iberia, KLM), with the FSCs all being members of an alliance, demonstrating that both the LCC and FSC airline models have competitive strengths. This is shown in Figure 2.8 below.

Figure 2.8: Percentage of departing seats in EU27 Member States by top 10 airlines



Source: Steer analysis of Official Aviation Guide (OAG) data.

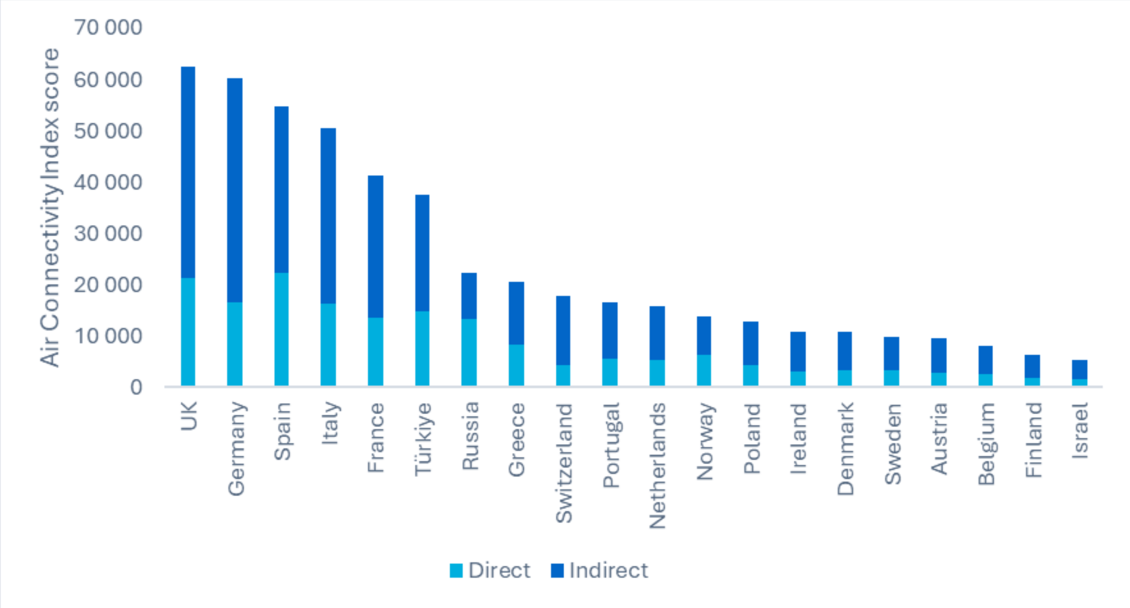
b. Air connectivity

Air connectivity measures the number of destinations that passengers can reach when flying from a particular airport and can be defined in a number of ways. ACI Europe, in its Airport Industry Connectivity Report 2025, categorises connectivity into two main types:

- **Direct connectivity**: Direct air services from the airport, weighted by the frequency of flights to the same destination; and
- **Indirect connectivity**: The number of destinations accessible via onward connecting flights through hub airports. Indirect connections are weighted according to quality factors such as transfer time, and the level of detour involved in the routing.

Figure 2.8 shows that in 2025, the UK recorded the highest level of air connectivity in geographic Europe, followed by Germany, Spain, Italy, France, and Türkiye. This demonstrates the different levels of air connectivity across the EU; Member States with major hubs are generally strongly positioned in terms of air connectivity, while other Member States are heavily reliant on indirect connectivity via these hubs and lack direct connectivity to/from their own airports. It also shows that hubs in Germany, Spain, Italy and France have higher levels of air connectivity than Türkiye, despite concerns over competitiveness discussed in 5.2.2.c.

Figure 2.9: 2025 Top 20 countries in Europe ranked by air connectivity index



Source: ACI Europe. NB: Air Connectivity Index score defined in the ACI EUROPE report is a composite score based on direct and indirect connectivity, weighted by the number of destinations, frequencies of flights, and quality of connections (i.e. connecting time, detours). The units shown for the Air Connectivity Index score are an arbitrary scale.

2.4.2. Airports

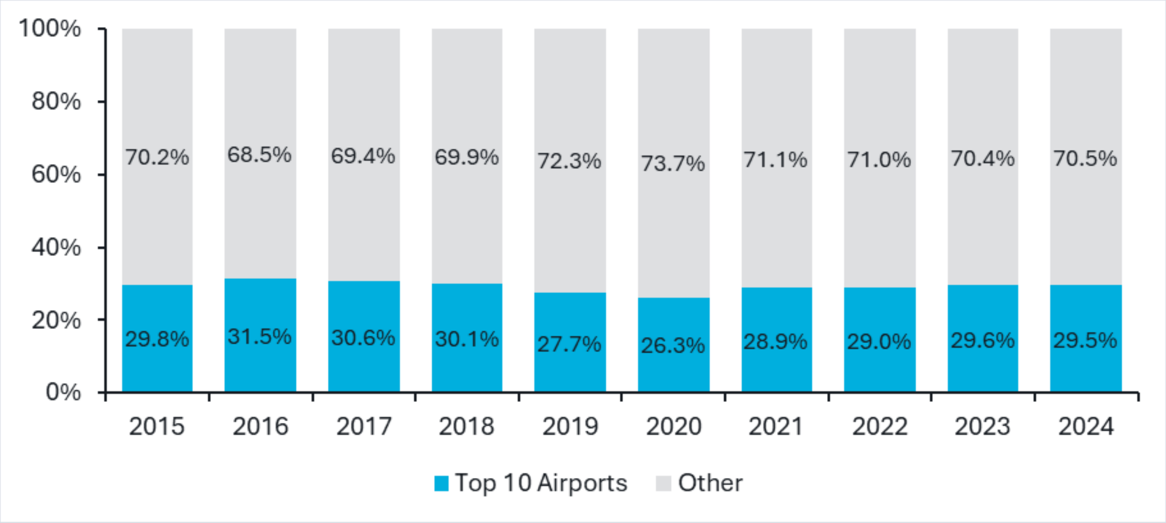
Airports in Europe have a mixture of sizes and business models, with many owned or operated under concession by private consortia (e.g. Aeroporti di Roma in Italy, Lisbon, Athens), while others are publicly owned, either at national level (e.g. Aéroports de Paris in France, Spanish airports through AENA) or regionally (as in Germany). Generally, airports are operated on a commercial model, with a mixture of aeronautical revenues (from passenger fees, landing charges, etc. paid by airlines) and non-aeronautical revenues (commercial revenues from retail concessions, car parking etc.) covering operating costs and the capital costs of construction and maintenance of the terminal and airfield facilities. Airport charges to airlines are regulated by Directive 2009/12/EC (the Airport Charges Directive) and are required to be reasonably related to cost.

As airports generally serve different cities, they do not typically directly compete with each other in the same manner as airlines, but rather act as complementary services to support airline services between the cities concerned; however, airports 'compete' to attract airlines to serve them when they serve the same geographies as other airports, or similar geographies (e.g. close to similar recreational seaside destinations). Where a city is served by multiple airports, these could compete, but examples are rare in the EU, as most such cities have a single airport operator for all the airports, such as Paris (Aéroports de Paris) and Rome (Aeroporti di Roma).

However, airports do compete directly when they act as connecting "hubs", providing travellers with alternative connections where direct flights are not available (or are inconvenient). In that case, the airport and the major airline(s) based the connecting hub compete directly for connecting passenger traffic against other hub airports and the airlines based at those other airports.

In 2024, the ten largest European airports accounted for 29.5% of the total available departing seats across the EU-27. This represents a slight decrease compared to 2015, when their combined market share stood at 29.8%. This is shown in Figure 2.10.

Figure 2.10: Percentage of departing seats in EU27, split by the main top 10 airports



Source: Steer analysis of OAG data.

2.4.3. Aerospace

The aerospace industry in the EU is characterised by a small number of large firms operating in the civil commercial and/or military non-commercial segments, including Airbus (France/Germany/Spain), BAE Systems (UK with presence in Poland and Sweden), Dassault Aviation (France), Safran (France), Leonardo (Italy), and MTU Aero Engines (Germany), leading to a concentration of dominant firms at the top of the value chain supported by an extensive supply chain of smaller firms (European Commission, 2026).

Airbus, together with Boeing, controls around 80% of the global civil aviation market for airframes (IATA, 2025). Regional aircraft manufacturers based in Europe include ATR (Franco-Italian) which holds a leading position in turboprops, and business aviation producers such as Dassault Aviation.

The reason for a high concentration of large firms at the top of the value chain is that the most competitive firms must continually invest into research and development to deliver new products that have a lower climate impact, improve safety, and/or lower costs for operators (European Commission, 2026). In a defence context, continual innovation is necessary to improve operational capabilities in defence against new and emerging threats. Given the research and development intensity required to remain competitive in the industry, large firms are more likely to be able to finance significant proportions of revenues into innovation due to their economies of scale.

Finally, the emerging urban air mobility segment is mainly comprised of several smaller firms as a result of its nascent nature (ASD Europe, 2025). For electric and hydrogen aircraft, while major players such as Airbus are exploring how to develop these aircraft, the market is characterised by smaller companies with fewer capital resources such as H2Fly (DE).

2.4.4. Air Navigation Service Providers (ANSPs)

There are two main types of air navigation services (ANS); serving flights "en route" (i.e. the cruise phase of flight), and "terminal" (i.e. take-off and landing at airports) services for individual airports. Given that the core objective of *en route* ANS is to coordinate air traffic to avoid collisions, it is not practical to have competing ANS services over a given territory, so *en route* services are exclusively monopolies. In recent years there has been a strengthening of selective liberalisation in the Terminal ANS segment, which manages the approach to airports for landing, in some European states: in countries such as Spain and Sweden, the market share managed by non-incumbent operators has grown, fostering competition and new commercial models (EUROCONTROL, 2024).

Air traffic management within the European Union falls under the jurisdiction of individual Member States[11], whose Air Navigation Service Providers (ANSPs) coordinate through EUROCONTROL, which covers 42 European states including all EU Member States. The decentralised framework leads to fragmented airspace; the geographical restriction of each Member State's jurisdiction limits the efficiency of air traffic operations and the system's ability to manage the increasing traffic volumes.

2.4.5. Ground handling

Since the 1996 Groundhandling Directive came into effect, the ground handling market at major EU airports has been liberalised, although the extent of this varies significantly between Member States. Under the Directive, airports above 2 million passengers must allow independent handlers, ensuring airlines "have the choice between at least two ground handling service providers" in key service categories. ACI Europe (n.d.) reports that this opening "resulted in competition between ground handling companies and lower costs for airlines". In practice, almost all large EU hubs now have multiple handlers (global firms like Swissport, Menzies, WFS, dnata, as well as local companies) competing, while smaller airports remain exempt. Compliance has been broadly achieved (for example, Poland was forced to remove restrictions at Warsaw-Okęcie in the 2010s), but some Member States have been subject to infringement actions to enforce full liberalisation.

Service providers, particularly the global firms, compete for access to European airports, both through offering services to airlines at those airports, but also need to get airports' agreement to operate, through a licence or similar type of permission. Generally, where there is significant competition between ground handlers, the fees charged to airlines by ground handling service providers tend to be driven down in line with conventional economic theory, but data to validate this could not be identified as it is commercially sensitive.

2.4.6. Aviation fuel

Jet fuel, primarily composed of kerosene, is the standard fuel utilised by commercial aviation. A report by the European Commission (COM(2025) 59) notes that most airports in the EU have between one and five aviation fuel suppliers, of which a significant number have only one or two, indicating a high level of concentration at the airport level. The level of competition at airports for fuel supply is dependent on how the supply rights are granted; where rights are granted via competitive tenders, fuel supply is often awarded on an exclusive basis to one or a small number of suppliers over a number of years (Idem).

The price of aviation fuel depends on the procurement arrangements by airlines; while this is commonly via a fuel supply agreement between the airline and fuel supplier, some airlines have established self-supply entities to purchase fuel from producers and sell it to the airline directly (i.e. cutting out the fuel supplier) (COM(2025) 59). Additionally, LCCs face greater challenges in securing direct access to refuelling infrastructure at major European airports where fuel infrastructure is owned by a single or small group of suppliers, as hub carriers tend to establish direct contractual agreements with fuel suppliers at the airport, while LCCs and smaller carriers lacking bargaining power rely on third-party operators or collective agreements with fuel suppliers (IATA, 2024; IATA, 2025). The Groundhandling

[11] With exceptions, such as the Maastricht Upper Area Control (MUAC) centre, which provides air navigation services in the upper space, on behalf of Belgium, north-west of Germany, Luxemburg and the Netherlands.

Directive (96/67/EC) regulates competition in the uplift of fuel to aircraft, but not the supply of fuel to the airport.

In the market for Sustainable Aviation Fuel (SAF), a report by EASA (2025) found that fewer than 10 fuel suppliers accounted for 80% of the SAF market in 2024 in the EU, which is indicative of a significant degree of market concentration. It adds that this high concentration is reflective of the early nature of the SAF market, and that currently only well-capitalised suppliers are able to deliver significant quantities of SAF to airports.

IATA forecasts indicate that demand for conventional jet fuel will continue to increase in the coming years (although the level of growth is not specified), highlighting that the increased reliance on third country suppliers is a possible risk to the EU's jet fuel security. For SAF, demand will increase in line with the ReFuelEU mandates for production and uplift of SAF in the EU, described in more detail in 5.2.2.b, but it remains uncertain how the market structure will evolve from its current position of a high concentration of well-capitalised firms.

2.5. Financial performance of the aviation sector

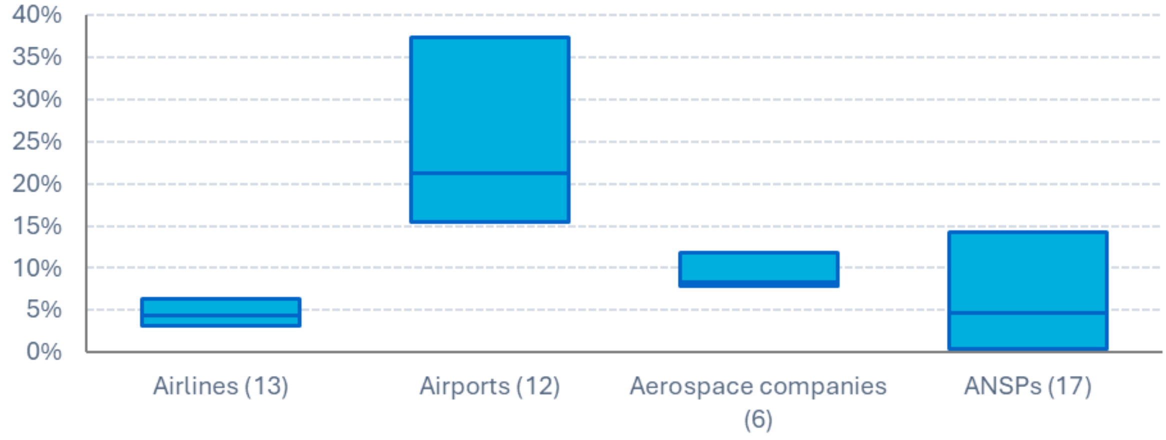
The below section assesses the financial performance of the aviation sector in the EU. The metric used to measure profitability is the EBIT margin, and the metrics used to measure access to capital are the cost of capital and a firm's credit rating. A description of these metrics and calculations used, as well as the rationale for selecting each company analysed in these metrics, and hyperlinks to the source data, is provided in Annex A.

2.5.1. Profitability of the EU aviation industry

As described above, to assess the profitability of the EU aviation industry, the 2024 EBIT margins of the sample of aviation companies are analysed. This is shown in Figure 2.11 below, along with the sample size by industry. These show the first quartile (top 25% - top of each block shown), median (mid-ranked – middle line of each block), and third quartile (bottom 25% - bottom of each block) EBIT margins of the sample of aviation companies, thereby ignoring any outlying data points which may skew the analysis[12]. Ground handling service providers (GHSPs) and aviation fuel providers are not included in the chart or table below, due to small sample sizes (a result of the lack of publicly available financial information for the EU companies operating in these industries).

[12] For example, one of the ANSPs in the sample (LFV – the ANSP of Sweden) recorded an EBIT margin of *negative* 372.6% in 2024, significantly out of line with peers and with the company's own historical performance. Excluding such outlying data points allows for an easier analysis of the overall profitability of the EU aviation industry.

Figure 2.11: 2024 EBIT margins of sample of EU aviation companies – first quartile, median, and third quartile



Source: Steer calculations based on published 2024 financial statements.

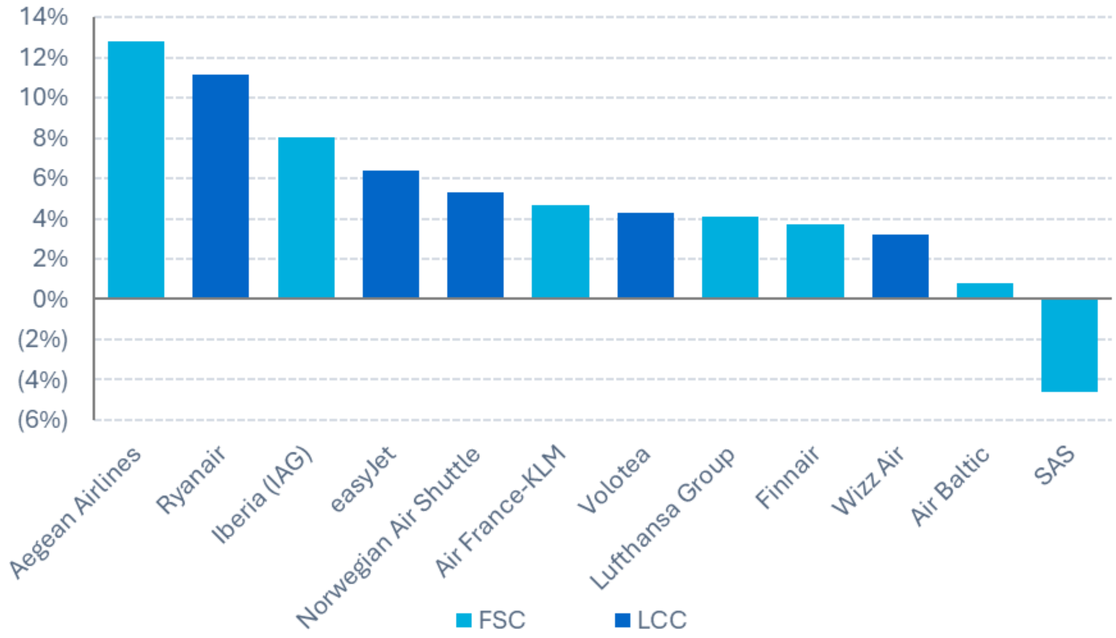
Figure 2.11 shows that EU airports are on average significantly more profitable than other EU aviation companies, with an average (median) level of profitability of 21%, compared to 4% for airlines, 8% for aerospace companies and 5% for ANSPs.

This is consistent with the structural features of each industry, described in section 2.4 above. While airlines compete directly with each other (both within the EU and with airlines from other regions), airports generally are unique to their localities and only compete in certain circumstances. Aerospace companies do compete globally, but the major European aerospace companies have a strong competitive position (with Airbus supplying over half of the world's commercial aircraft in 2024[13]). ANSPs operate in a regulated environment with controls to ensure their charges are cost-related, leading to positive but modest profit margins.

Figure 2.12 shows the 2024 EBIT margins of the sample of EU airlines. Charts for other industries are shown in Annex A. In the chart below, FSCs are shown in light blue and LCCs in dark blue. It demonstrates that both LCCs and FSCs can be profitable in the EU, and hence both the LCC and FSC business models can be competitive airline business models in the EU.

[13] 52% of commercial aircraft deliveries in 2024, based on Airbus 766, Boeing 348, Bombardier 146 and Embraer 206, all figures from companies' respective annual accounts.

Figure 2.12: 2024 EBIT margins of sample of EU airlines



Source: Steer calculations based on published 2024 financial statements. Note: Azores Airlines (an FSC) has been excluded from chart due to very low profitability (a 2024 EBIT margin of -16.7%).

2.5.2. Access to capital of the EU aviation industry

To assess the access to capital of the EU aviation industry, the cost of capital and credit ratings of the sample of aviation companies is analysed. These are described in the sections below. The methodology and detailed analysis is presented in Annex A.

a. Cost of capital

NYU Stern academic Aswath Damodaran's cost of capital figures are available for both the "air transport" industry (corresponding to the "airline" industry) and "aerospace / defence" industry (corresponding to the "aerospace" industry). The other aviation industries analysed in this report (airports, ANSPs, GHSPs and aviation fuel) are not available in Damodaran's figures, and so are not considered further here.

The average cost of capital (based on borrowings in USD for consistency with cost of capital figures in Chapter 3) for these industries in the EU are:

- Air transport (airlines): 7.47%; and
- Aerospace / defence (aerospace): 10.08%.

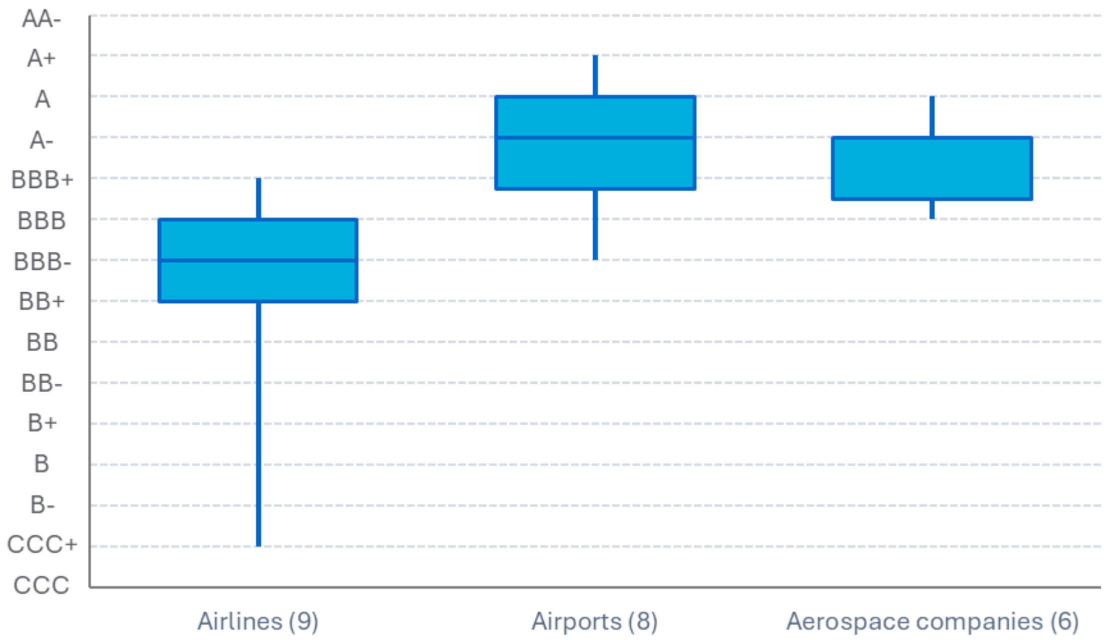
These figures compare to the non-financial economy average cost of capital of 7.64%, which indicates that aerospace in particular faces a higher-than-average cost of capital, possibly due to requiring significant capital investment.

b. Credit ratings

The credit ratings of the sample of EU aviation companies are shown in the chart below; detailed analysis is presented in Annex A. This chart shows the minimum and maximum credit ratings of the sample[14], along with the first quartile (top of box), median (middle line of box), and third quartile credit ratings (bottom of box), noting that these summary statistics being calculated on the basis that credit ratings can be assumed to follow a linear numerical scale. The credit ratings scale used is that of S&P Global and Fitch Ratings; where Moody's is the source of a company's credit rating, this rating has been translated into its equivalent on the credit ratings scaled used by S&P Global and Fitch Ratings. The scales used are shown in Figure A.1 in Annex A.

ANSPs, GHSPs and aviation fuel providers are not included in the chart below, due to small sample sizes. The sample sizes for the other three industries are shown in the chart below. The sample sizes are smaller than for the EBIT margin analysis, as fewer companies receive credit ratings on their debt than publish publicly available financial accounts.

Figure 2.13: 2024 credit ratings of sample of EU aviation companies – minimum, first quartile, median, third quartile and maximum



Source: Moody's, S&P Global and Fitch Ratings. Note: The median and third quartile credit rating for the sample of EU aerospace companies was identical at A–, and hence these values cannot be distinguished in this chart.

This chart demonstrates that airports generally have better credit ratings than airlines, in line with their higher levels of profitability. Aerospace companies also have better credit ratings than airlines, aligning with their higher average levels of profitability.

2.6. Conclusions

The EU aviation sector comprises six distinct industries, each with its own characteristics:

- **Airlines.** Airlines compete both within the EU and with airlines in the rest of Europe and global airlines. The air connectivity index highlights that several European countries are strongly positioned in terms of number of direct and indirect flights offered. Airlines operate on two broad

[14] The outliers among the sample of credit ratings are significantly less extreme than the EBIT margin outliers, as credit ratings can only lie on a defined scale with a specified minimum (D) and maximum (AAA), and hence the minimum and maximum credit ratings are included in the credit ratings chart, unlike in the EBIT margins chart.

models, Low-Cost Carriers (LCCs) and Full-Service Carriers (FSCs), with many of the latter members of the three global airline alliances. LCCs typically only operate within Europe and neighbouring regions, while FSCs typically offer a mixture of short-haul and long-haul services, and therefore compete both with European airlines and with airlines based in other world regions. While LCCs have grown in absolute and relative terms, both the LCC and FSC models can be strongly competitive and profitable. From a financial perspective, airlines in the EU are generally profitable, although not significantly so when compared to other aviation industries – this is reflected in their lower credit ratings.

- **Airports.** While different ownership models for airports exist across the EU, large and/or hub airports generally operate on a commercial basis, generating aeronautical revenues from airline customers and commercial revenues from passengers sufficient to cover operating and capital costs. Airports are a complementary service for airlines and, for direct air services, only compete when they serve the same or similar geographies. The largest airports often act as hubs for one or more major airlines, and these compete with other hub airports (and those airports' hub airlines) for connecting traffic. From a financial perspective, airports in the EU are generally highly profitable, much more so than other aviation industries. This is reflected in the higher credit ratings EU airports achieve compared to other aviation industries.
- **Aerospace**. While the aerospace industry is global, Europe has a strong competitive position in the industry, hosting the world's largest civil airframe manufacturer Airbus and several aircraft engine and avionics companies. Its largest competitor is the United States, home of Boeing and many other aerospace companies, while there are also important manufacturers based in Canada, Brazil, and China. From a financial perspective, EU aerospace companies are generally moderately profitable, more than airlines, but less so than airports.
- **ANSPs.** Air Navigation Service Providers provide *en route* air navigation services in the territory they cover on an exclusive basis to ensure aircraft safety, and are hence monopolies. They are under the control of national governments, although EU Member States are members of the Single European Sky which attempts to coordinate their activities for the purpose of cost and environmental efficiency. From a financial perspective, EU ANSPs are generally moderately profitable, but as state-owned enterprises, their profitability is not a particularly relevant indicator of their competitiveness.
- **Ground handling**. Ground handling services are purchased by airlines at each airport they serve. Ground handlers must be approved by the relevant airport, but an element of competition is ensured under the provision of the Ground Handling Directive (Directive 96/67/EC) at airports with over two million annual passengers. Ground handling can be provided by a number of large providers operating internationally, by the airport operator itself, by major airlines based there, or by local providers, who generally compete for airline contracts of around three to five years.
- **Aviation fuel**. Fuel supply is a global industry dominated by a few major companies such as BP, Shell and TotalEnergies. One or more of these companies typically supply fuel to most major airports, with airlines contracting directly with the fuel company (potentially with an additional delivery cost paid to the airport and/or ground handlers). The transition to greener fuels, in particular Sustainable Aviation Fuel (SAF) is being pushed in different ways in different jurisdictions around the world (see Table B.1). In the EU, and some other countries such as the UK, Türkiye and Singapore, a "mandate" has been put in place requiring fuel suppliers to include a certain percentage of SAF (and within that, also a percentage which is of non-biological origin, known as e-SAF) from a certain date, increasing over time. However, SAF is significantly more expensive than

conventional (fossil-sourced) aviation fuel, so this leads to higher costs for airlines, and, to the extent that the mandate in the EU is higher than in other jurisdictions, can lead to a competitive disadvantage for EU airlines.

3. COMPARATIVE ASSESSMENT OF ECONOMIC PERFORMANCE OF SELECTED THIRD COUNTRIES

KEY FINDINGS

The EU air passenger market in 2024 is 20% smaller than the USA by passenger numbers (measured by airport departures/arrivals) and +6% larger than in China, indicating it is a highly relevant market globally. However, the EU air freight market is smaller than that in the USA (which is +108% larger) and in China (+19% larger).

The US aeronautics industry had revenues of EUR 200 billion in 2024, twice the value in the European aerospace industry (over EUR 100 billion, including UK companies). The aerospace industries in other third country comparators are significantly smaller. As a result, the EU and United States lead the global aerospace market and compete strongly.

Market structures of the aviation industries are similar to those in the EU, but the proportion of capacity provided by Low-Cost Carriers is higher in the EU (43% in 2024) than in any of the third country comparators. Airports in the US, China and the Gulf states are generally in public ownership, while there is more of a mix of ownership models in the EU and other comparator countries. Air navigation service providers (ANSPs) in the EU are fragmented, compared to the single ANSP in the USA, China and other comparator countries.

EU airports generally have higher profitability than those in our sample of non-EU airports. Similarly, EU aeronautics companies generally have higher profitability than our sample of non-EU companies. However, EU airlines generally have lower profitability than our sample of third country comparator airlines.

The cost of capital for European aerospace companies is higher than for US equivalents, and similarly, the cost of capital for European airlines is higher than for US equivalents.

3.1. Introduction

This chapter describes the current economic performance of the aviation sector in selected non-EU countries, described in section 1.3, and compares their performance with that of the EU. The non-EU countries were chosen for analysis based on their relevance in terms of size (US and China), presence in the aerospace industry (US and Canada) or strategic location from the perspective of competition with the European aviation sector (Türkiye, UAE and Qatar).

The chapter provides a factual overview and comparison against the EU aviation sector to facilitate understanding of the current state of the sector. It includes a description of:

- the contribution that the aviation sector for each third country comparator makes to their respective economies as a whole;
- the size and growth of the aviation market in the third country comparators over the past 10 years;

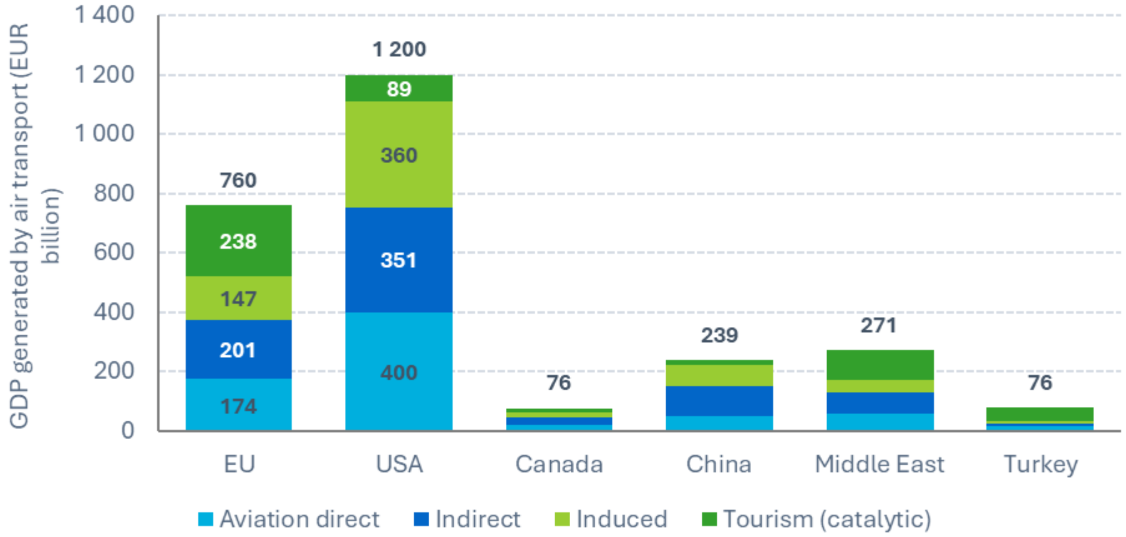
- an assessment of the market concentration in each industry of their respective aviation sectors;
- an assessment of the air connectivity performance of each of the third country comparators' aviation sectors; and
- the financial performance of selected entities in each industry of the aviation sector.

This assessment compares the current economic performance of the non-EU aviation sectors with the EU aviation sector (described in Chapter 2), highlighting key differences which influence the relative competitiveness of the EU aviation sector. The implications of these differences (in terms of strengths and weaknesses of the EU aviation sector competitiveness) are examined in Chapter 5.

3.2. Economic contribution of the aviation sector

Further analysis of ATAG (2024) referenced in Section 2.2 demonstrates that air transport is a key contributor to economies around the world. This is shown in the charts below, which show the estimated GDP and jobs generated by the aviation industry in 2023 across the world. The direct, indirect, induced, and catalytic impacts are shown for the EU and comparator third countries[15] below; the explanation of each of these categories of economic impact is provided in footnote 4.

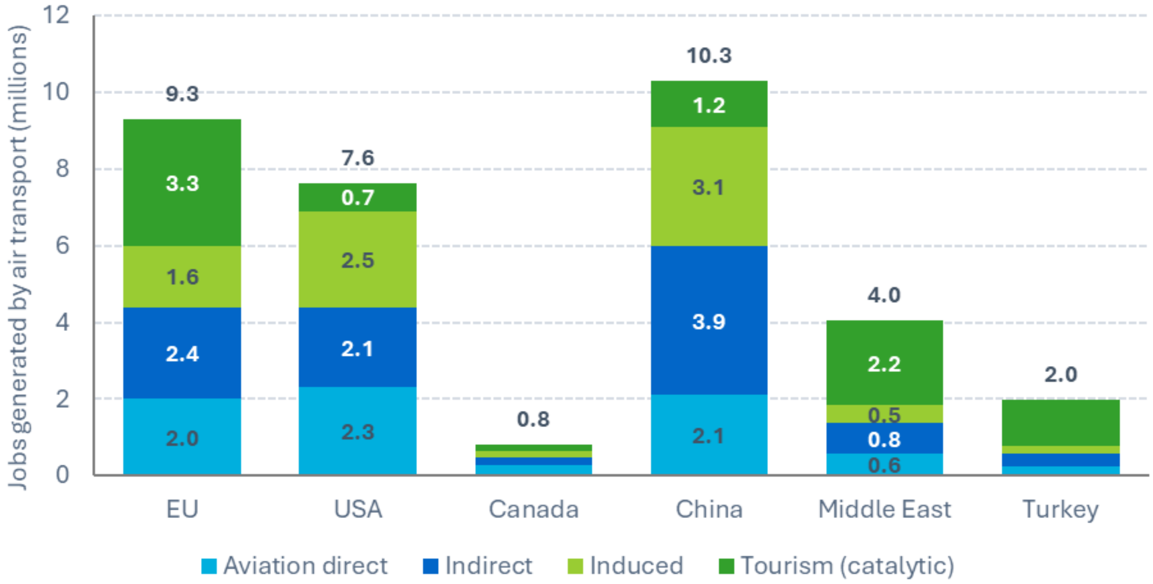
Figure 3.1: GDP generated by air transport in the EU and comparator third countries – direct, indirect, induced and catalytic (tourism) impacts, EUR billions, 2023 prices



Source: Aviation Benefits Beyond Borders study. NB: For consistency, financial data not published in EUR is converted to Euros using the average 2023 exchange rate between USD and EUR.

[15] The "Middle East" region from the ATAG report is used as a proxy for Qatar and the UAE.

Figure 3.2: Jobs generated by air transport in the EU and comparator third countries – direct, indirect, induced and catalytic (tourism) impacts



Source: Aviation Benefits Beyond Borders study.

These charts show that the economic impact of aviation is particularly large in the US, where it contributes EUR 1.2 trillion to GDP, if all the estimated economic impacts of aviation are considered. Aviation therefore accounts for 4.7% of US GDP[16], vs. 7.3% in the EU (from section 2.2). The impact on jobs is largest in China, where 10.3 million jobs are estimated to be generated by aviation, above the 9.3 million jobs estimated to be generated by aviation in the EU.

3.3. Size and growth of the aviation market

3.3.1. Passenger traffic

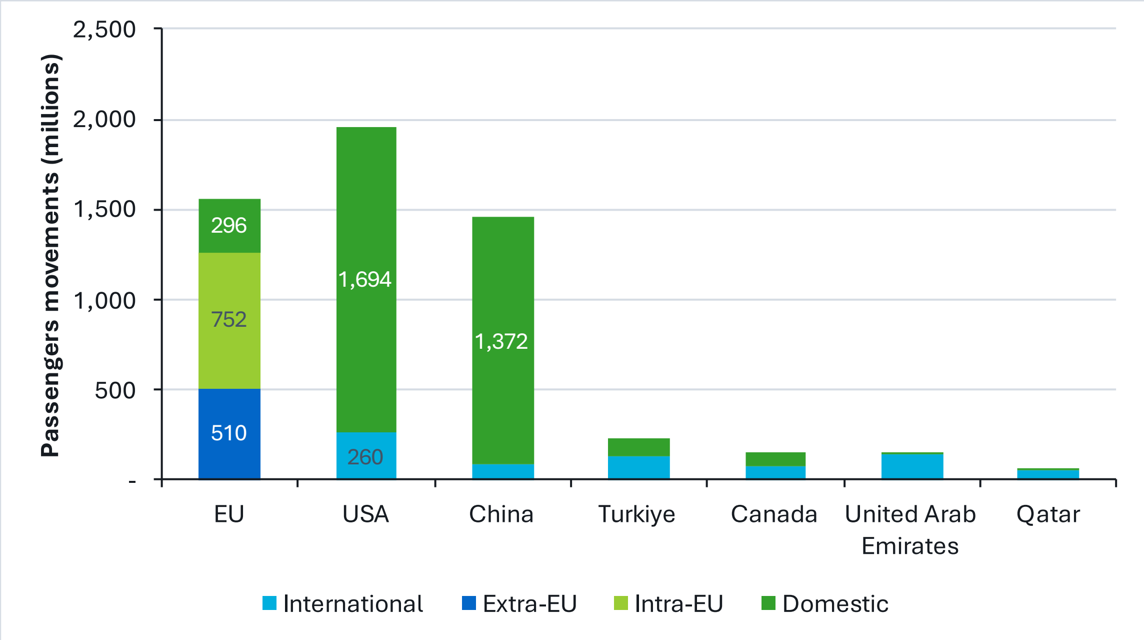
Passenger traffic data is available internationally from the Airports Council International's (ACI) World Air Traffic Report 2025. As this is based on passenger arrivals and departures at airports, it is collated on a different basis from the Eurostat passenger data presented in Chapter 2, which is based on the number of flown passengers, but it has the advantage of being available globally on a consistent basis[17].

The chart below (Figure 3.3) shows the number of passengers on international and domestic routes in the selected third countries as well as in the EU, noting that the Middle Eastern states of the UAE and Qatar are entirely focused on international passengers with a negligible number of domestic passengers. The EU data is split between domestic passengers (within Member States), intra-EU (between Member States and extra-EU (to/from third countries).

[16] US GDP in 2023 was $27.36 trillion, or EUR 25.28 trillion, when using the 2023 average EUR/USD exchange rate; 4.7% = EUR 1.2 trillion/EUR 25.28 trillion.

[17] Note that the ACI data is based on passenger arrivals and departures at airports, so that each passenger on an aircraft seat is counted twice. This means that the passenger numbers shown for the EU are not directly comparable with the Eurostat data shown in Chapter 2, which represents flown passengers (i.e. each passenger counted only once). Allowing for this difference in definitions, the ACI and Eurostat data for air passengers within the EU are closely aligned (within 2%). ACI has been used for third country comparators as it is globally available, whereas Eurostat covers only the EU.

Figure 3.3: Number of passengers for EU and comparator third countries, domestic/ international 2024

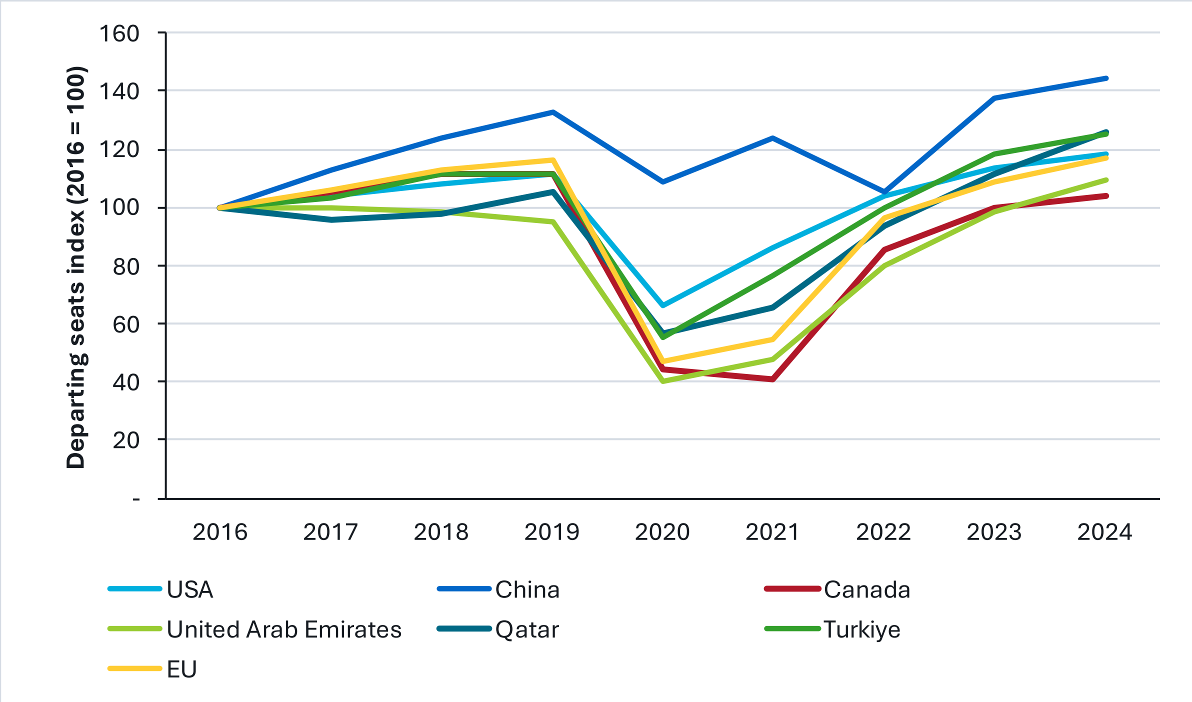


Source: Steer analysis of ACI data, supplemented by Eurostat and OAG. Note that the ACI data for the EU is not directly comparable with the Eurostat data but is aligned once suitable adjustments are made (see footnote 17 above). The split between domestic, intra-EU and extra-EU traffic is based on adjusted Eurostat data, but the total is reconciled to the total value from ACI data. Data for China split by domestic/international passengers does not reconcile in source data; based on OAG analysis of departing seats and total passengers in the ACI data, the domestic passengers are hence inferred.

The chart shows that in 2024, the USA and China were the leading passenger markets for domestic aviation, together representing 36.2% of passenger journeys, based on data from Airports Council International's (ACI) World Air Traffic Report 2025. The USA is also the largest market for international air passenger travel. The total EU passengers (combining domestic and international) are higher than the number in China but lower than the number in the US.

Over the past eight years, when measuring the growth of each of the third country comparators' aviation markets by the number of departing seats available, Figure 3.4 shows that the Chinese market has experienced the most significant growth. Both Türkiye and Qatar have grown faster than the mature US market; Qatar has grown faster than the UAE indicating its increasing competitiveness in the Middle East. The EU's growth is the 5th highest of 7 markets, growing since 2016 by a greater amount than Canada and the United Arab Emirates.

Figure 3.4: Indexed growth of departing seats for EU and comparator third countries, 2016–2024



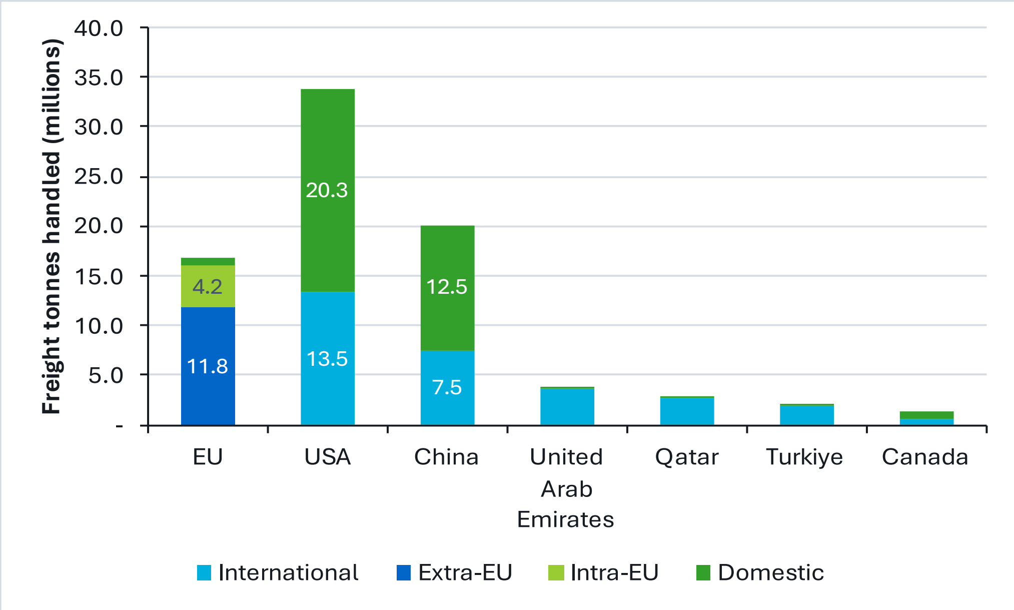
Source: Steer analysis of OAG data.

3.3.2. Air cargo traffic

The USA and China were also the leading air cargo markets globally in 2024, ranking 1st and 2nd and together representing 43.5% of global volumes according to ACI's World Air Traffic Report 2025. This is in part driven by large domestic markets, but both countries also rank 1st and 2nd globally in international air cargo. Figure 3.5 shows air cargo volumes for the comparator third countries as well as for the EU[18]. The UAE and Qatar rank 7th and 10th respectively by total air cargo, which is almost entirely due to international air cargo. In the EU, only Germany has a larger air cargo market (4.8 million tonnes in 2024 in total; 5th worldwide). The EU carried volumes of 16.8 million tonnes on the same basis as the data shown in the chart below (airport loading and unloading), lower than both the US and China, but significantly higher than the other comparator third country markets.

[18] Note that the ACI data is based on airport loaded and unloaded cargo at airports, so that each tonne carried on aircraft is counted twice. This means that the cargo data for the EU are not directly comparable with the Eurostat data shown in Chapter 2, which represents flown cargo (i.e. each cargo tonne counted only once). Allowing for this, the ACI and Eurostat data for cargo within the EU are closely aligned (within 2%). As with the passenger third country comparisons, the ACI data has been used because it is available globally, whereas Eurostat data covers only the EU.

Figure 3.5: Volume of air cargo by comparator third country, domestic/international, 2024

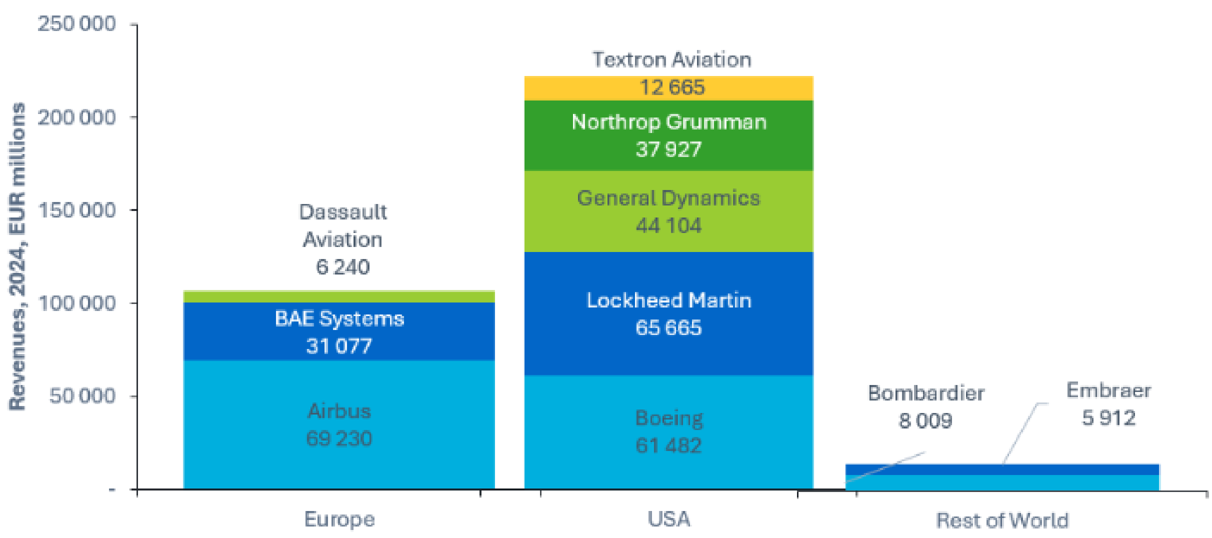


Source: Steer analysis of ACI data.

3.3.3. Aerospace

The U.S. aerospace industry is the largest in the world, reflective of the size of its aviation market as well as a large defence industry. Revenues among major US aircraft producers total over EUR 221 billion, compared to over EUR 106 billion for EU aircraft producers and almost EUR 14 billion for Bombardier (Canada) and Embraer (Brazil). This is shown in Figure 3.6.

Figure 3.6: 2024 revenues of EU and comparator third country aerospace manufacturers, EUR millions

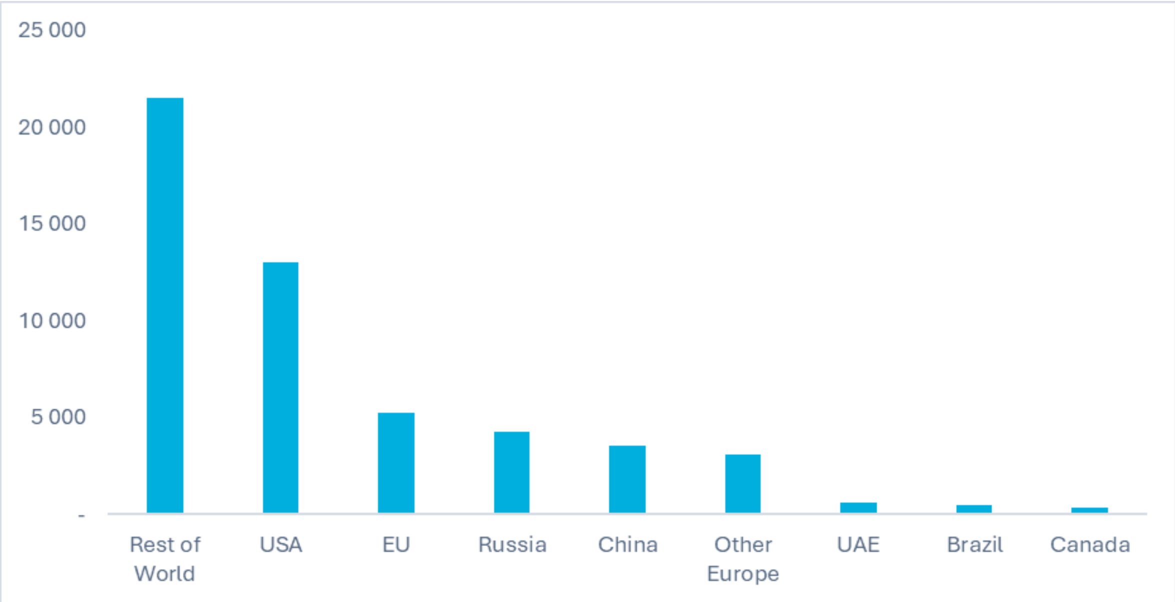


Source: Boeing, 2025, Lockheed Martin, 2025, General Dynamics, 2025, Northrop Grumman, 2025, Textron Aviation, 2025, exchange rate, Airbus, 2025, BAE Systems, 2025, Dassault, 2025, Bombardier, 2025, Embraer, 2025. NB: no data available for China's COMAC).

Similarly, US aircraft engine manufacturers reported over EUR 150 billion in revenue in 2024 (GE Aerospace, 2025, RTX, 2025, Honeywell Aerospace, 2025, Williams International, 2025, exchange rate), while European aircraft engine manufacturers recorded over EUR 50 billion (Safran, 2025, Rolls Royce, 2025, MTU Aero Engines, 2025).

Major US companies like Boeing, GE Aviation, and Pratt & Whitney (part of RTX) dominate the US market; notably, GE Aviation and Pratt & Whitney have pioneered aircraft propulsion systems for military and civilian use, and today they command about 70% of the engine market for the U.S. Department of Defense (Sanders and Velasquez, 2022). Similarly, in the civil aircraft engine market, the United States accounts for 40% of the global market (Fortune, 2025). The dominance of the US market is also reflected in the defence industry, where the US is by far the largest single country market of current combat aircraft, and more than double the combined market of EU countries, as shown in Figure 3.6 below.

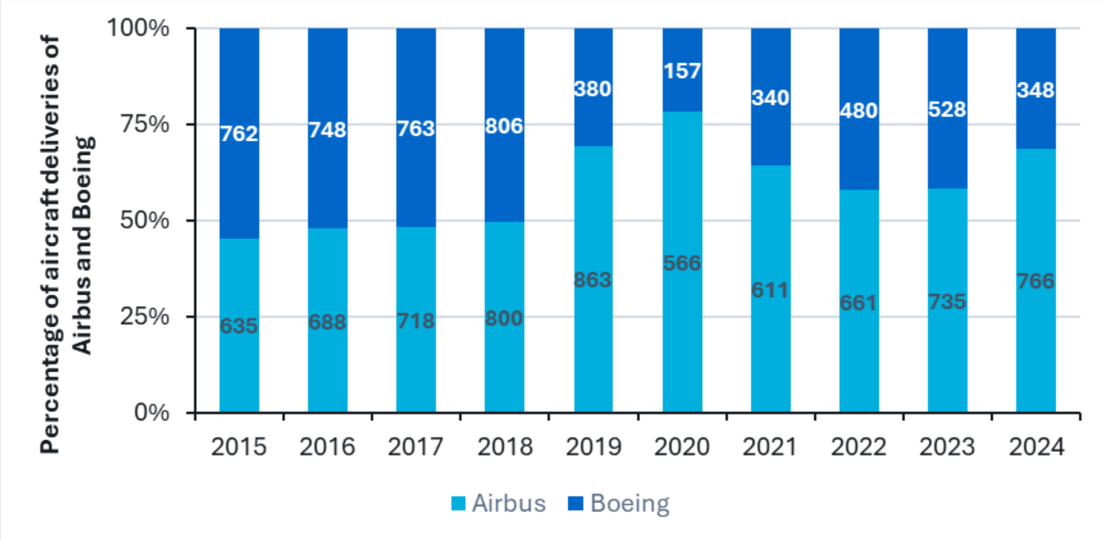
Figure 3.7: Current number of combat aircraft in fleet by country



Source: Global Fire Power (accessed February 2026).

In terms of commercial aircraft, the global market is dominated by Airbus and Boeing with a 40% and 39% market share of the active commercial aircraft fleet respectively (IATA, 2025). However, in recent years Airbus has outperformed Boeing in aircraft deliveries, as shown in Figure 3.8, which indicates its strong competitive position in the market.

Figure 3.8: Number of commercial aircraft deliveries of Airbus and Boeing, 2015-2024



Source: Steer analysis of [Airbus](), [Boeing]() data.

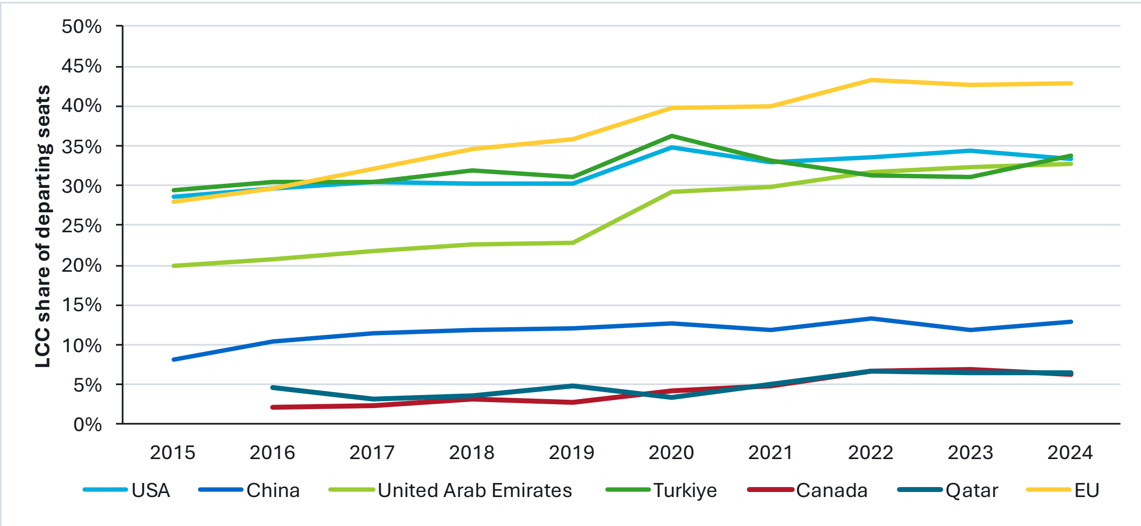
3.4. Market structure

3.4.1. Airlines

a. Airline characteristics

As in the EU, the past 10 years have seen a trend towards the Low-Cost Carrier (LCC) airline model, with a reduction in relative size of Full-Service Carriers (FSCs), although both models remain successful in the comparator third countries. The EU has the largest share of LCCs (defined in terms of departing seats), while Canada and Qatar have the lowest share. This is shown in Figure 3.9.

Figure 3.9: Low-Cost Carrier Share by country



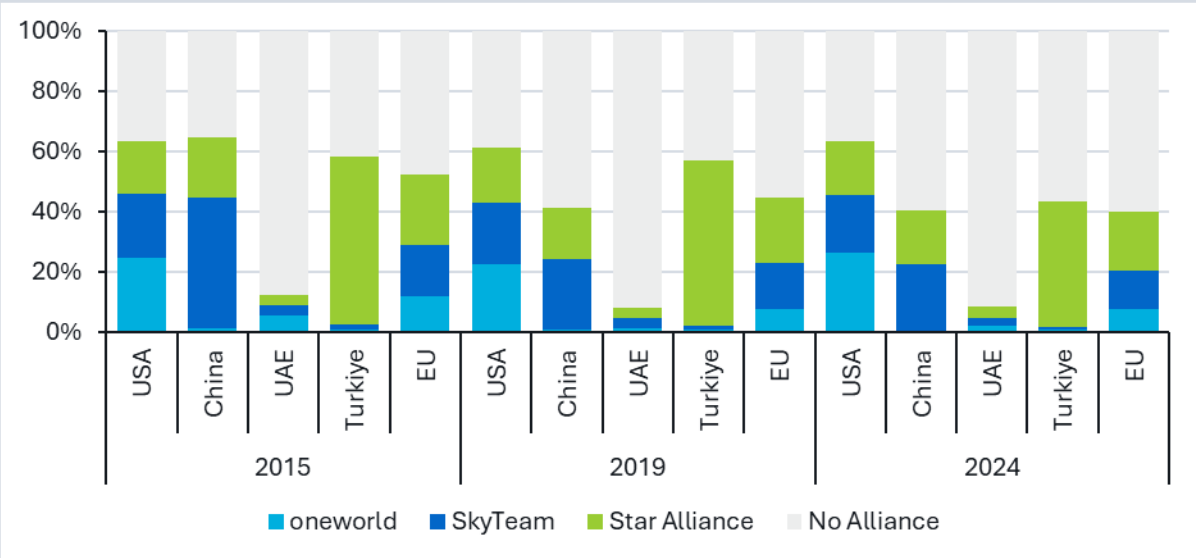
Source: Steer analysis of OAG data. Data for Canada and Qatar not available for 2015.

As in the EU, the three major global airline alliances, Star Alliance, SkyTeam and Oneworld, are key players in countries like China, the USA and Türkiye. In contrast, the United Arab Emirates has only a small share in major alliances, as neither Emirates nor Etihad are affiliated with any of them (it does not consider Qatar or Canada, whose markets are less diverse). The primary alliances in the comparator third countries are:

- **Star Alliance**, which includes United, Air China and Turkish Airlines.
- **SkyTeam**, which includes China Eastern Airline and Delta.
- **Oneworld**, which includes American Airlines and Alaska Airlines.

The market share of capacity provided by alliance-affiliated carriers in China, the United Arab Emirates, and Türkiye has declined since 2019, mirroring trends observed within the European Union (Figure 3.10). In contrast, in the United States, the market share of the primary airline alliances has remained stable over the past decade, highlighting the sustained significance of its leading airlines.

Figure 3.10: Market share of main alliances



Source: Steer analysis on Official Aviation Guide (OAG) data.

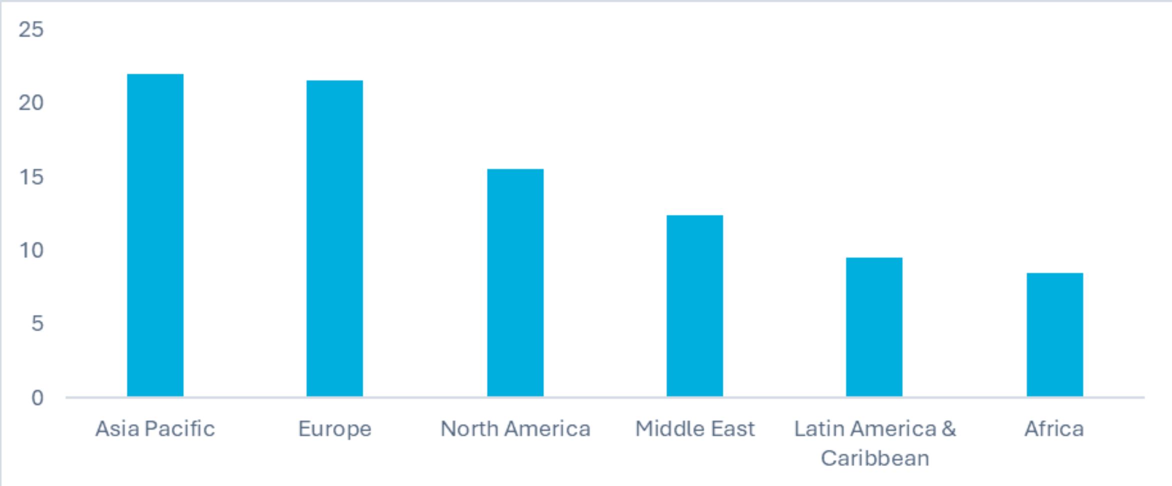
b. Air connectivity

This section compares the European air connectivity index to the rest of the world.

The IATA Quarterly Air Transport Chartbook (IATA Sustainability and Economics, Q4 2024) examines inter-regional air connectivity. It should be noted that IATA's Air Connectivity Index is calculated differently from ACI's methodology, as described in section 2. The IATA index measures the seat capacity of direct flights from a country to each destination at an airport-pair level. Seat capacity to each destination is weighted by the size of the destination airport, measured by total seat capacity handled. Consequently, flights to larger airports, such as major hubs, contribute more to connectivity scores than flights to smaller airports. These weighted measures are then aggregated at the country, regional, and global levels.

IATA calculates the inter-regional air connectivity index on a quarterly basis. For the chart below, the highest index value recorded in any quarter of 2024 has been used. As illustrated, Europe — alongside Asia-Pacific — records the highest inter-regional connectivity index, highlighting Europe's strong connectivity with the rest of the world. This is shown in Figure 3.11.

Figure 3.11: 2024 Inter-regional air connectivity index



Source: IATA.

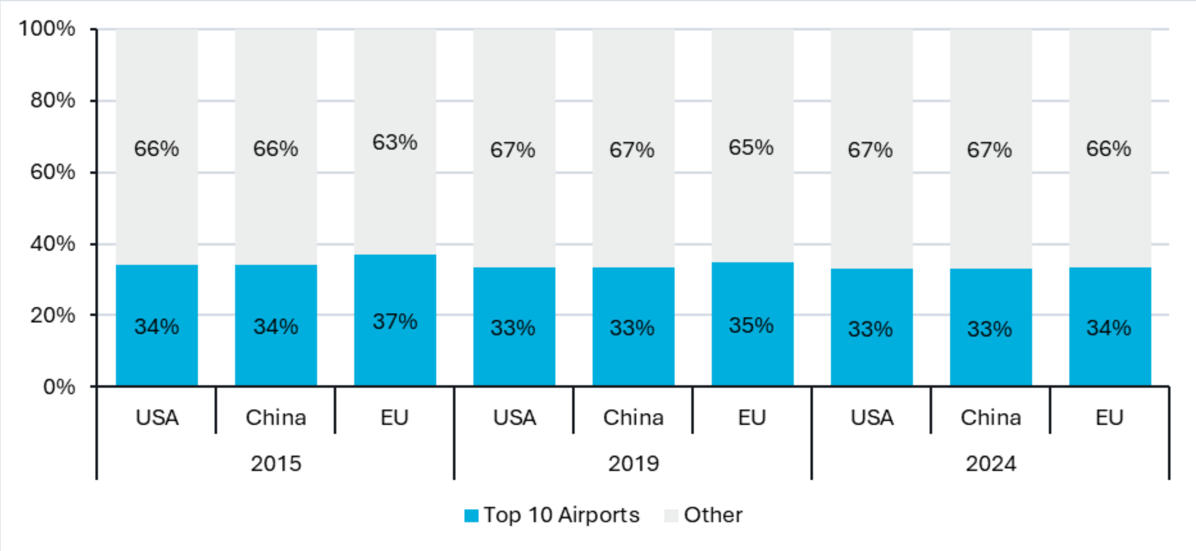
3.4.2. Airports

a. Airport operating models and market concentration

Airport operating models around the world vary considerably, as shown in section A.3 and Table B.1. As in the EU, some airports are privately operated on a commercial basis, often under a concession arrangement, but more frequently airports are under public ownership, whether at national, regional or city level. In the United States, most airports are publicly owned, with revenues coming from a combination of a Passenger Facility Charge (PFC), charged per passenger and added to ticket prices up to a maximum value set by the Federal Aviation Authority, federal grants from the Airport Improvement Program, landing fees charged to airlines and commercial revenue from retail and other outlets. Similarly, in China, airports are publicly owned with a range of different funding sources. Airports in Canada are generally publicly owned and operated on a not-for-profit basis. Airports in Qatar and the United Arab Emirates are state-owned.

The level of airport market concentration in the USA, China and the European Union was broadly similar in 2024. As shown in Figure 3.10, over the past ten years, the European market has been slightly less concentrated, with the top ten airports accounting for 34% of departing seats in 2024, while in the Chinese and US markets, the degree of concentration has remained largely stable over the years.

Figure 3.12: Percentage of departing seats in USA, China and EU, split by the main top 10 airports



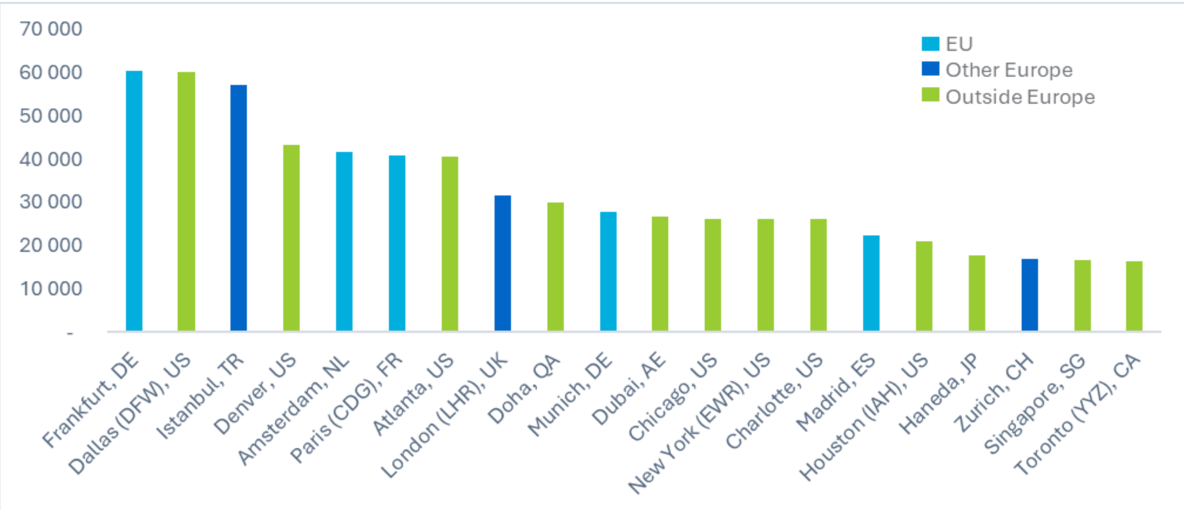
Source: Steer analysis on Official Aviation Guide (OAG) data.

b. Airport hub comparison

This section analyses the air connectivity of European airports, with a particular focus on hub airports, and compares their performance with other major hub airports worldwide. This is complementary to the measure of inter-regional air connectivity discussed in b above.

ACI Europe (2026) has assessed hub connectivity for the world's leading hub airports. Hub connectivity measures the number of connecting flights that can be facilitated by a hub airport, taking into account minimum and maximum connection times, and weighting the quality of connections based on factors such as transfer time and the level of detour involved. According to the ACI connectivity index, Frankfurt was the most connected hub airport globally in 2025, narrowly ahead of Dallas – Fort Worth (DFW). Several European airports are within the top 20 most connected hubs worldwide (Figure 3.13).

Figure 3.13: 2025 Top 20 global hubs ranked by air connectivity index



Source: ACI Europe, 2026.

3.4.3. Aerospace

Aerospace is a strategic industrial sector both for defence and civil applications. The main aircraft manufacturers are Airbus (France) and Boeing (USA) who dominate the commercial segment, with smaller producers such as Bombardier (Canada), Embraer (Brazil) and new players such as COMAC (China). There are several non-commercial aircraft manufacturers Lockheed Martin (USA), General Dynamics (USA), Northrop Grumman (USA), BAE System (UK), Textron Aviation (USA) and Dassault Aviation (France) producing aircraft for general aviation and defence sectors. The engine sector is characterised by large leading companies such as Safran (France), Rolls-Royce (UK), Pratt and Whitney (USA), GE Aerospace (USA), RTX (USA), Honeywell Aerospace (USA), MTU Aero Engines (Germany) and Williams International (USA) specialising in engines and avionics systems.

The aerospace supply chain is extensive and globally integrated; aircraft production uses a global supply chain, with suppliers in Europe producing parts for US-assembled aircraft and vice versa. The industry is shaped by strong collaboration between civil and military sectors: manufacturers producing engines and systems for military planes often also supply commercial aviation. This overlap gives rise to dual-use technologies, innovations from defence projects frequently benefit civil aviation, streamlining R&D expenses and maximising economies of scale. The significant amounts of public expenditure on defence in the USA supports its large aerospace sector and gives the USA a competitive advantage not only in production of military aerospace but where the innovations have dual civil-military use. In 2025 the total defence expenditure (which includes military aerospace) by EU Member States is estimated to reach EUR 381 billion, around 2.1% of GDP (European Council, 2025); in the USA the Department of Defense expenditure would total $908 billion (EUR 803.5 billion, EUR = 1.13 USD), over double the amount of the EU, equivalent to 3% of US GDP (American Enterprise Institute, 2025).

Recently, this relationship has extended into Urban Air Mobility, where drones (originally developed for military applications) are intended to be used to transport people and goods. Historically, such dual military-civil use has led to widespread adoption of technologies like radar and GPS.

China's civil aerospace and aviation services market is fast growing, driven by an expanding fleet, increasing passenger volumes, and enhanced economic influence. This growth supports robust development within the Chinese aeronautical sector; notably, the Commercial Aircraft Corporation of China has recently introduced the C919 narrow-body aircraft to compete with the Boeing 737 and Airbus A320 models. Despite these major steps forward, Chinese aerospace industry still trails the European and North American industries and a significant number of components, including engines and essential systems for aircraft power and control, continue to be sourced from North American and European suppliers, despite efforts to develop domestic capabilities (International Trade Administration, 2025). Moreover, China does not produce sufficient aircraft to fully meet domestic demand nowadays and will likely remain dependent on Boeing and Airbus for the foreseeable future. The absence of advanced technical expertise comparable to that found in the United States and Europe presents ongoing challenges for China, and it remains uncertain whether COMAC will be able to disrupt Boeing and Airbus' dominance in the international aircraft market. By the late 2020s, however, COMAC is expected to strengthen its presence within China and potentially expand its reach to regional markets.

China is aiming to develop its domestic capabilities through joint-venture opportunities with overseas aerospace producers in order to integrate the advanced technologies into COMAC's supply chain. From a military perspective, China aims to develop its aerospace industry through its 'military-civilian fusion' policy, described by the US State Department (2020) as aiming to "exploit the inherent dual-use nature of (aerospace), which has both military and civilian applications". As identified above, the potential for crossover benefits between military and civil aviation indicate that China's civil aerospace capabilities may benefit from military innovations, although it is currently very uncertain the extent to which this may occur given the lack of verifiable information.

3.4.4. Air Navigation Service Providers (ANSPs)

As in the EU, *en route* air navigation services are provided by a single ANSP in each of the comparator third countries (for example the Federal Aviation Administration in the US and Civil Aviation Administration of China). In these third countries, the ANSP is part of the national aviation authority or government department responsible for air transport, whereas in the EU, ANSPs are predominantly national authorities with a small degree of privatisation (EUROCONTROL, 2024).

The main difference is that the EU comprises multiple sovereign airspaces and, as a result of this fragmentation, requires coordination between national ANSPs. This is provided through the EU's Single European Sky regulation (Regulation (EU) 2024/2803), while EUROCONTROL acts as the Network Manager providing an overarching management of air traffic flows, balancing capacity supply and demand, and supporting the safe and efficient operation of flights in Europe (EUROCONTROL, n.d.).

3.4.5. Ground handling

According to major ground handling service provider Menzies Aviation (2025), ground handling services at many major airports worldwide are dominated by a small number of global players which operate at several key airports, whereas ground handling at many smaller airports is typically provided by independent suppliers. Some of the main ground handling companies are based in Europe (e.g. Menzies Aviation, Swissport International) and operate around the world; Menzies Aviation operates in Europe, Asia, North and South America.

The North American ground handling market is valued at $1.6 billion (approximately EUR 1.36 billion) and is predominantly controlled by a select group of leading firms operating across several major airports. Industry consolidation is a significant trend in this region (Mordor Intelligence, 2025).

In Asia, the market is projected to experience robust growth, driven by rising air passenger volumes, enhancements in airport infrastructure, and advancements in technology (Mordor Intelligence, 2025). Notably, China's airport ground handling sector is positioned for considerable expansion, supported by a growing aviation industry and governmental initiatives aimed at modernising airport facilities. Major Chinese airports are primarily serviced by large operators, commonly state-owned entities such as Beijing Aviation Ground Services. In addition, international operators are actively seeking market entry through joint ventures, such as the partnership between Menzies and China National Aviation Corporation at Hong Kong Airport.

Prominent ground handling companies also operate in Türkiye and the UAE. In Türkiye, Havas Ground Handling (a subsidiary of the TAV Group) and Çelebi Aviation are the principal providers, serving various domestic and international airports. Likewise, dnata, part of the Emirates Group, is a key regional and global operator headquartered in the UAE, with extensive operations worldwide.

3.4.6. Aviation fuel

The major suppliers of jet fuel in the United States (ExxonMobil, Chevron, Phillips 66, and Shell Aviation) maintain extensive distribution networks. Among the production of conventional jet fuel, the majority of these companies are also investing in SAF production as an area of growth, supported by US policy initiatives such as the SAF Grand Challenge and Inflation Reduction Act offering incentives to stimulate domestic production and uptake of SAF by airlines.

China's jet fuel market is dominated by major state-owned enterprises, including China National Aviation Fuel Group and South China Bluesky Aviation Oil. These organisations manage extensive domestic supply chains and utilise joint ventures to expand their international presence. Although SAF production remains limited due to the absence of mandatory SAF adoption targets in China, research efforts in this field are rapidly advancing.

Türkiye's major player is Turkish Fuel Services which accounts for 50% of jet fuel supply in Türkiye and is the main supplier of Turkish Airlines. Turkish Fuel Services developed a programme to refuel Turkish Airlines planes that fly from Istanbul Airport with SAF. SAF production in Türkiye is to be mandated from 2025 onwards in order to meet emissions reductions targets in line with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) (see Table B.1 in annex).

By contrast, the European market is dominated by companies that do not have a strong presence in comparator third countries, such as BP, Shell, and TotalEnergies. IATA (2025) notes that European refineries are less able to compete with more efficient refineries outside of Europe and as a result the European jet fuel market is increasingly reliant on imports, reaching a third of total demand in 2025 and expected to increase in the future. A higher reliance on imported supply of jet fuel poses challenges to Europe's jet fuel security, according to IATA (Idem).

The strong push in Europe towards the use of SAF (regulated by RefuelEU Aviation) could lead to increased competition due to production constraints and higher energy costs. In contrast, in other geographies such as in the USA, SAF production benefits from cheaper energy and feedstocks which could give a competitive price advantage to non-EU producers.

3.5. Financial performance of the aviation sector

3.5.1. Overview of financial metrics

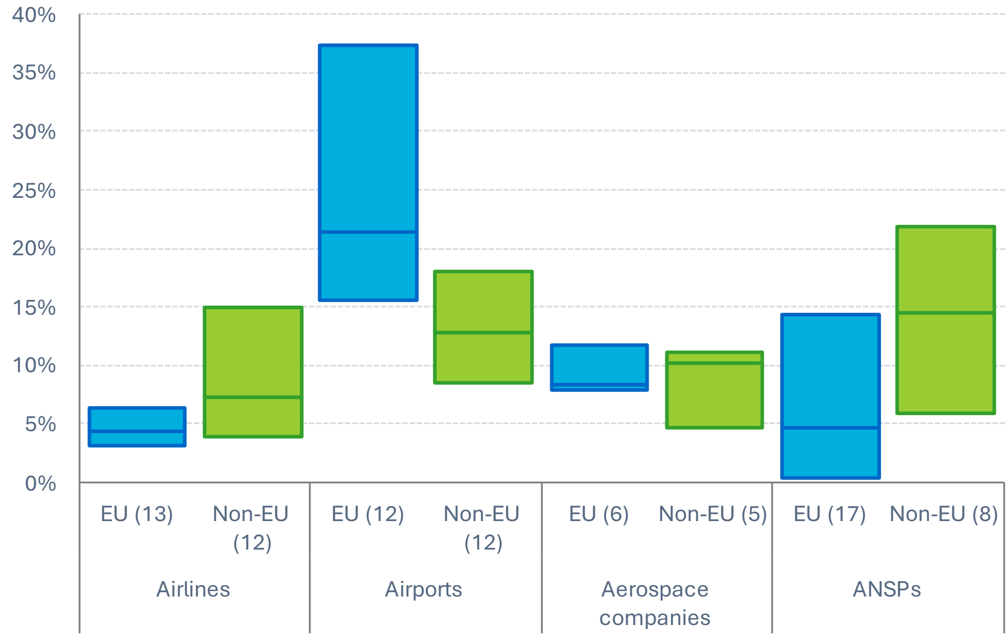
The financial metrics used in this section are the same as in Section 2.5 – profitability and access to capital. These are key indicators of a firm's competitiveness. The metric used to measure profitability is the EBIT margin, and the metrics used to measure access to capital are the cost of capital and a firm's credit rating. This section compares these metrics for comparator third country (non-EU) aviation sector firms against EU aviation sector firms. A description of these metrics and calculations used, as well as the rationale for selecting each company analysed in these metrics, and hyperlinks to the source data, is provided in Annex A.

The analysis is based on a sample of firms, which is representative of the different business models, sizes, and geographies in which these companies operate, covering both EU and non-EU aviation sector firms. In some cases, the sample size is limited due to the lack of publicly available financial information where firms are privately owned and do not produce publicly available financial accounts.

3.5.2. Profitability of the EU aviation industry vs. comparator third countries

To assess the profitability of the EU aviation industry vs. the aviation industry of comparator third countries, the 2024 EBIT margins of the sample of aviation companies are analysed for both EU and non-EU companies. This analysis is shown in Figure 3.14, along with the sample sizes for each industry. GHSPs and aviation fuel providers are not included in the chart below, due to small sample sizes.

Figure 3.14: 2024 EBIT margins of sample of EU and non-EU aviation companies – first quartile, median, and third quartile



Source: Steer calculations based on published 2024 financial statements.

The chart shows that non-EU airlines in the sample are more profitable than the EU airlines. However, the EBIT margins for non-EU airlines are skewed upwards by Turkish Airlines, Emirates and Qatar Airways, three of the world's largest hub carriers, all of which are majority state-owned, and all of which reported 2024 EBIT margins of above 15%. Conversely, the three large Chinese state-owned carriers all reported 2024 EBIT margins of below 5%, with Air China reporting an EBIT margin of 1.3% and China Eastern Airlines an EBIT margin of 1.2%.

For airports, the chart above shows that the non-EU airports in the sample are generally less profitable than EU airports. However, as airports do not generally directly compete with each other (except for certain hub airports, and in certain cities with more than one major airport), this is not particularly relevant to competitiveness. The most profitable non-EU airport in the sample is London Heathrow, with a 2024 EBIT margin of 42.3%.

The chart above shows that the EU and non-EU aerospace companies in the sample have similar levels of profitability, however the non-EU sample is skewed downwards by Boeing, which reported a *negative* 16.1% EBIT margin in 2024. Conversely, Rolls Royce reported a 2024 EBIT margin of 15.5%, the highest of any aerospace company in the sample.

The chart above shows that non-EU ANSPs are generally more profitable than EU ANSPs. However, these firms are generally highly regulated, so this may not be particularly informative. Four ANSPs operating on the periphery of the EU reported high EBIT margins in 2024 – those of Türkiye (51.7%), Georgia (23.5%), Armenia (21.3%), and the UK (18.5%).

Charts for each of these industries showing the EBIT margins of each of the companies in the sample, are shown in Annex A.

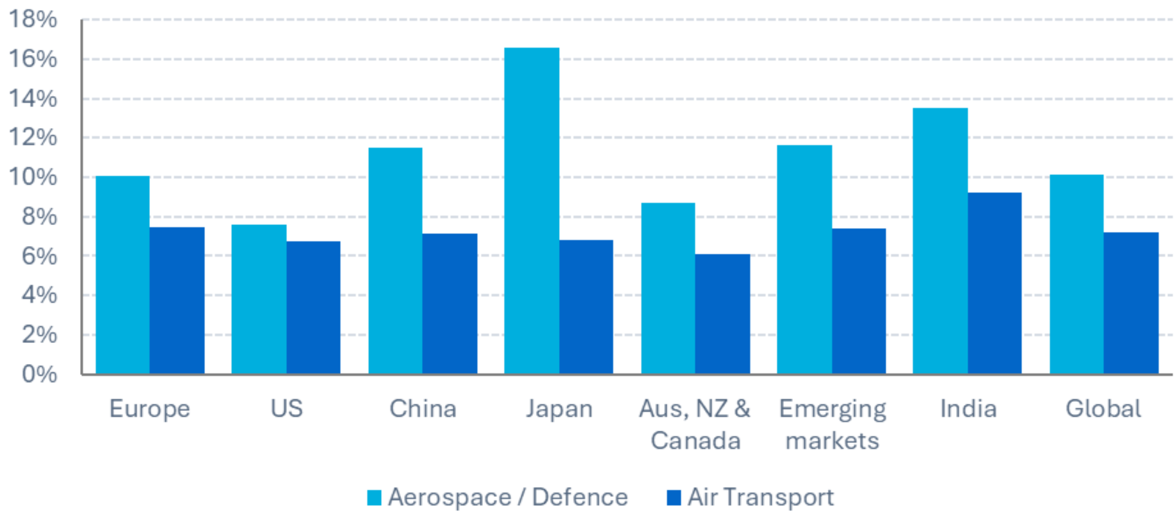
3.5.3. Access to capital of the EU aviation industry vs. comparator third countries

As described above, to assess the access to capital of the EU aviation industry vs. comparator third countries, this section considers the cost of capital and credit ratings of the sample of aviation companies. These are described in the sections below.

a. Cost of capital

NYU Stern academic Aswath Damodaran's cost of capital figures for "air transport" (airlines) and "aerospace / defence" (aerospace) are shown in Figure 3.15 (these figures are based on borrowings in USD for consistency across all geographies). The other aviation industries analysed in this report (airports, ANSPs, GHSPs and aviation fuel) are not available in Damodaran's figures, and so are not considered further here.

Figure 3.15: 2024 Cost of capital (USD) for aerospace / defence and air transport industries, comparison across geographies



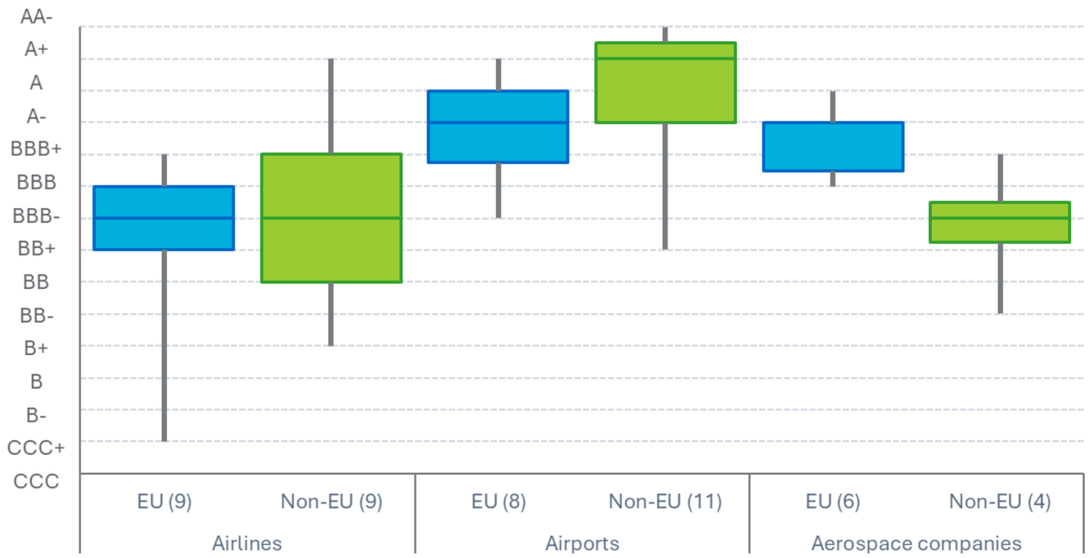
Source: NYU Stern academic Aswath Damodaran's cost of capital figures.

Figure 3.13 shows that the cost of capital in the aerospace (aerospace / defence) sector in Europe is in line with the global average, but higher than in the US and Australia/New Zealand/Canada grouping. Similarly, the cost of capital in the air transport (airlines) sector in Europe is in line with the global average, but above that in the US, Australia/New Zealand/Canada, China and Japan.

b. Credit ratings

The credit ratings of the sample of EU and non-EU aviation companies are shown in Figure 3.16. The sample sizes are smaller than for the EBIT margin analysis, as fewer companies receive credit ratings on their debt than publish publicly available financial accounts.

Figure 3.16: 2024 credit ratings of sample of EU and non-EU aviation companies



Source: Moody's, S&P Global and Fitch Ratings. For China Eastern Airlines and Beijing Capital Airport (PEK), ratings come from CSPI Ratings, who use the same ratings scale as Fitch. Note: The median and third quartile credit rating for the sample of EU aerospace companies was identical at A-, and hence these values cannot be distinguished in this chart.

The chart above shows that non-EU airlines may have better credit ratings than their EU counterparts, meaning that they are likely able to borrow more cheaply. This is in line with the findings that non-EU airlines are generally more profitable than EU airlines. However, the median credit rating for EU and non-EU airlines is the same (BBB-), so while it is true that some non-EU airlines have a better credit rating than EU airlines, there is not a structural difference observed.

For airports, the chart above shows that non-EU airports have generally better credit ratings than their EU counterparts, despite their lower average levels of profitability. This may be due to the fact that many of the non-EU airports in the sample are based in the US and are owned by local government, making them more creditworthy in the eyes of lenders.

The chart above also shows that non-EU aerospace companies have generally lower credit ratings than their EU counterparts, although this is based on a small sample size. Bombardier, based in Canada, has the lowest credit rating of any aerospace company in the sample, with a BB- rating given by S&P Global.

3.6. Conclusions

The EU's air passenger market has grown the 5th highest of the 7 markets analysed (EU, China, Türkiye, Qatar, USA, United Arab Emirates, Canada) over the period since 2016 (see 3.3.1). In comparison of the EU aviation sector with those of comparator third countries, the following aspects can be noticed:

- **Airlines**: The airline markets in the comparator third countries include both Low-Cost Carriers (LCCs) and Full-Service Carriers (FSCs), but the LCC share of the market is higher in the EU (43% in 2024) than in any of the comparator third countries (around 30-35% in the USA, Türkiye and UAE, significantly lower in China, Canada and Qatar). The three global alliances (Star, SkyTeam and Oneworld) are well represented in the EU (38% of traffic in 2024) but are relatively larger in the US (63%). Europe — alongside Asia-Pacific — records the highest inter-regional connectivity index, highlighting Europe's strong connectivity with the rest of the world. Non-EU airlines are generally more profitable than EU airlines.

- **Airports**: Airports in the comparator third countries are managed under a range of different ownership models, as is the case in the EU. The market share of the top 10 airports is similar in each of the EU, the US and China. The EU has several hubs ranking within the world's most connected airports, further highlighting Europe's strong position in air connectivity. EU airports are generally more profitable than non-EU airports.
- **Aerospace**: Europe is a strong player in the global civil aerospace market, with a comparable market presence to the US and a much stronger position than the other key producing countries (in particular Canada, Brazil, China). However, compared with the US, the EU benefits from fewer synergies with military aerospace production (given the very large US fleet of military aircraft and unified procurement), while its energy costs are higher than those in all of the other relevant comparator third countries. EU and non-EU aerospace companies operate with similar levels of profitability, although Boeing continues to operate at a substantial loss.
- **Air Navigation Service Providers**: These are generally national providers, as in the EU, but without the framework provided by the Single European Sky initiative or the coordination of air traffic flows through EUROCONTROL. The control of EU airspace is more fragmented than third country comparators because it is comprised of multiple blocks of sovereign airspace; the Single European Sky initiative and Network Manager aim to reduce the impact of fragmentation on traffic flows. Non-EU ANSPs tend to be more profitable than EU ANSPs.
- **Ground handling**: Ground handling services are provided by a range of international and local providers as in the EU. There is a very wide range of competitive situations in the selected comparator third countries, with largely monopolistic handlers in Qatar and the UAE, significant competition between major handlers in Turkish airports and a wide range of suppliers at US airports.
- **Aviation fuel**: There is a wide range of suppliers of aviation fuel at airports in the comparator third countries, dominated by international major oil companies in the US, state-owned suppliers in China and a mixture of suppliers in Türkiye. By contrast, the European fuel supply market is dominated by companies that do not have a strong presence in comparator third countries, such as BP, Shell, and TotalEnergies. The strong push in Europe towards the use of SAF could be affected by higher energy costs compared to other geographies such as in the USA, where SAF production benefits from cheaper energy and feedstocks.

4. ASSESSMENT OF WORKING CONDITIONS BY INDUSTRY

KEY FINDINGS

The airline industry working conditions are highly dependent on the role, airline business model, and region where the airline operates. "Atypical working practices" exist for only a minority of workers (10%); while these are legal in the EU, these roles are associated with poorer working conditions and lower attractiveness.

The airport industry is characterised by increased outsourcing of security and cleaning roles, which lowers costs for operators but is associated with poorer working conditions and benefits.

The aerospace industry is a high-skilled, attractive industry but suffers from skill shortages, which may impact the future competitiveness of the sector if not addressed.

The air navigation services industry is also high-skilled and well-remunerated but suffers from staff shortages, which currently contribute towards costly delays for airlines.

The ground handling sector suffers from poor working conditions due to low pay driven by competition, the manual nature of work, and a lack of training and career progression. Recent developments aim to widen access to training and safety to improve the industry's attractiveness.

4.1. Introduction

This section assesses the working conditions in the EU aviation sector by industry, focusing on the nature of roles in the sector, the attractiveness of the sector to workers, insights on working conditions, and whether there are labour shortages present.

Each industry's competitiveness is underpinned by its workforce; an industry lacking in sufficiently skilled and motivated workers will be less resilient to shocks, less equipped than other competitors to innovate, and ultimately less able to compete against global competitors. Similarly, a lack of attractiveness of an industry to workers can limit its ability to gain sufficient skilled workers and retain them in the long-term; they may choose to perform the same role in other global regions or enter other industries altogether.

For this reason, the assessment of working conditions links to competitiveness under the **infrastructure & resources** driver. The sections below consider the findings for each industry in the EU aviation sector.

4.2. Airline industry

The airline industry attracts 310,000 employees in the EU (ATAG, 2024). There are many positive reasons for workers to enter the airline industry; air crew are often well-remunerated, there are strict safety rules set by EASA in place on flight time limitations to prevent overworking, and it offers a highly mobile job travelling to different locations. The long-term attractiveness of the airline industry to employees is linked to high-quality contracts (offering job security, stability, and competitive remuneration), fatigue management, and career progression (Jorens and Valcke, 2025).

According to Eurostat data (sbs_ovw_act), in 2023 the average labour cost per FTE in the passenger air transport industry in the EU27 reached EUR 91,130, which is almost double the EU27 average labour cost per FTE in the economy as a whole (EUR 50,000), and clearly demonstrates the financial attractiveness of working in the industry. This likely reflects the competitive remuneration for pilots while cabin crew earn less, although the data does not specify between roles within the industry.

The working conditions and attractiveness of the role for air crew can vary significantly depending on the contractual arrangements. Research by Jorens and Valcke (2025) finds that workers directly employed by airlines report the best scores of wellbeing, job security, fatigue, and safety; workers employed under atypical contracts (i.e. not directly employed by the entity they perform their duties for, such as third-party agencies, self-employment contracts, or cross-border working) experience lower standards of safety behaviour and fatigue management, do not receive the same benefits such as social security as direct employees, and work overseas with less certainty over their working location.

Three examples of challenges the airline industry faces with respect to working conditions are described below. In each case, the employment form is not illegal *per se*, and no EU laws are breached in following these practices. However, they are linked with legal ambiguities and uneven applications of EU and national laws (such as identifying which Member State is responsible for regulatory oversight and/or social security benefits), which limits the European-wide standardisation of labour practices to be enforced in a harmonised way (European Labour Authority, 2025). The below employment practices are also associated with lower working conditions for employees (such as lower pay, job insecurity, impacts on safety culture, lower employment rights) (Idem).

4.2.1. Bogus self-employment

Bogus self-employment refers to a contractual arrangement whereby "persons/workers registered as self-employed whose conditions of employment are de facto dependent employment" (European Labour Authority, n.d.). While these workers are de facto employed by airlines, a self-employment contract can be used to "circumvent tax and/or social insurance liabilities, or employers' responsibilities" (Idem). This is because airlines control how, when and where work takes place as well as the amount the worker is paid for their role (Eurocockpit, 2020).

Genuine self-employment is difficult in the airline industry because (Brannigan et al., 2018):

- The flight crew do not have control over cost and pricing. They do not own the aircraft and therefore do not decide when/where to fly;
- Commercial airline pilots cannot carry out their role without continuous supervision and monitoring by the operator;
- This combination of factors shows both subordination and a lack of autonomy for pilots alongside an absence of entrepreneurial risk and reward; and
- This is backed up by the empirical evidence: 90% of pilots classified as self-employed are unable to work for more than one air-carrier in parallel and 93% had no control of when and how many hours they fly (Turnbull, 2020).

The reason for bogus self-employment is driven primarily by airlines; advantages are largely cost driven and include increased flexibility to adjust workforce size easily. Self-employment comes with fewer protections and benefits including holiday pay, sick pay and pension contributions (EurECCA, 2025).

The reduction in benefits vis-à-vis direct employment saves air carriers money but can leave air crew without a guarantee of stable work and with fewer employment benefits (Idem).

The prevalence of self-employment contracts among aircrew is around 10% (Ricardo, 2019; Jorens and Valcke, 2025), a minority of employees, albeit not an insignificant proportion. The prevalence of bogus self-employment also varies by region and by carrier. In Lithuania, Estonia, Latvia, Poland, Czechia, Slovakia, Hungary, Romania, and Bulgaria, 47% of workers reported they were directly employed by the airline, compared to 92.6% in the remainder of Europe (i.e. Austria, Belgium, Croatia, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovenia, Spain, and Sweden) (Jorens and Valcke, 2025). By carrier, Ricardo (2019) found that LCCs rely on self-employed workers more than FSCs (approximately 20% of workers for LCCs versus less than 5% for FSCs). One major LCC hires the majority of its pilots on self-employment contracts while all other LCCs analysed were found to hire fewer than 4% (Ricardo, 2019).

4.2.2. Pay-to-fly schemes

Pay-to-fly schemes are a form of atypical employment. Pilots pay to fly commercial aircraft to gain experience and flight hours, aiming to improve their employability in a competitive employment market, while airlines benefit by earning income from pilots and reducing costs by not paying pilot wages (ECA, 2017). Besides the financial burden pilots face, there are other negative effects (Idem);

- As with other atypical employment methods, there is no employment protection, social security, or career stability, and accumulating flight hours does not guarantee employment. Because pay-to-fly schemes do not always include a contract (it would be illegal to require contracted employees to pay for the flight hours operated); such practices are out of the scope of labour authorities, which intervene in cases with a contractual arrangement (ECA, 2022).
- The limited negotiating power pilots have in these arrangements can result in them being unable to refuse unsafe instructions or report fatigue, endangering both passengers and pilots.

Pay-to-fly schemes are most common among young pilots, as trainees seek to build flight hours. Trade unions estimate that 8-10% of pilots use pay-to-fly, with figures reaching up to 40% in regional airlines (Ricardo, 2019).

4.2.3. Wet leasing

Wet leasing is an airline industry practice where carriers lease aircraft and crew from other operators. The lessor airline operates the flight with its own aircraft and crew on behalf of the lessee airline, which sells the tickets for the flight. Wet leasing provides airlines with flexibility, such as covering unexpected aircraft downtime or managing seasonal changes (Jorens and Valcke, 2025).

However, Jorens and Valcke (2025) note the following problems associated with wet leasing:

- Atypical employment contracts are used more frequently for wet-leased air crew, with 65% of wet-leased crew atypically employed compared to an industry average of around 10% (Idem);
- There are links between social dumping[19] and wet leasing, with evidence that wet-leasing is being increasingly used for social dumping using staff employed in Lithuania, Estonia, Latvia, Poland, Czechia, Slovakia, Hungary, Romania, and Bulgaria and third country nationals (Idem); and

[19] Social dumping is a practice where air carriers exploit cheaper labour markets with fewer workers rights. This involves hiring third country nationals or from EU countries with less developed labour laws.

- Mental health, dehumanisation and fatigue are markedly worse among wet-leased crews (Idem), and training-continuity is also poorer (Aviation Week, n.d.). This is due to the fragmented employment relationships.

4.3. Airport industry

According to ATAG (2024) data, 120,000 individuals are employed by airport operators in the EU, with a further 1.2 million working at airports in other industries. Other staff working at airports but not directly employed by them include gate attendants and check-in staff (employed by airlines), ground handling services staff (employed by ground handling service providers), air traffic controllers (employed by air navigation service providers), customs and border staff (employed by public authorities), and retail. Therefore, the activities within the airport that the operator is directly responsible for are limited to security, passenger services (such as assistance for passengers with reduced mobility), and cleaning.

Published research on the working conditions among airport staff has not been conducted since Steer Davies Gleave (2015), summarised in a European Parliament (2016) briefing. The study did not provide an overall assessment of the attractiveness of the airport industry (due to a lack of data) but noted that airports increasingly rely on outsourcing functions for security and cleaning. Outsourcing of these services is anecdotally linked to lower levels of social security, lower wages, training, and holiday entitlement among staff.

4.4. Aerospace industry

The aerospace industry is a significant employer of high-skilled jobs in Europe, and one of the most successful high-tech sectors in the EU according to the European Commission (n.d.). Research by ASD Europe (2025) identified 1.1 million jobs in the EU supported by the aerospace, security, and defence industries (which is wider than just aerospace and includes non-aviation aspects). Eurostat data (sbs_ovw_act) shows that in 2023, the average labour cost per FTE for employees involved in the manufacture of air and spacecraft and related machinery was EUR 82,070, 64% higher than the economy-wide average (EUR 50,000).

However, despite contributing high-skilled and well-remunerated jobs, labour constraints and shortages of skilled workers to enter the industry limits the productivity of the industry and ability to meet demand in both civil and military aerospace industries (ASD Europe, 2025).

The EU has already initiated the *Pact for Skills for Aerospace and Defence* in 2020, aiming to reskill 300,000 and upskill 200,000 employees by 2030, with over EUR 1 billion in combined funding (European Commission, DG GROW, 2021). Member States and firms have also expanded dual education and apprenticeship schemes such as Airbus's Technical Academy and ITS programs in Italy.

Handling these shortages by offering a stronger value proposition and training in sustainability is essential to ensuring that labour shortages do not persist into the future, given the crucial role that the aerospace industry must play in providing high-skilled jobs, innovation in developing green technologies as well as its recognised importance in securing European strategic autonomy.

4.5. Air navigation services industry

The air navigation services (ANS) industry is characterised by a high degree of unionisation among controllers, strong remuneration and benefits packages as part of collective agreements, and closely controlled working hours in line with safety regulations. While this encourages existing air traffic control officers (ATCOs) to remain in the industry, barriers to entry for workers entering the profession include lengthy training programmes of over three years, according to EUROCONTROL (n.d.), and age limits (e.g. for roles in the Maastricht Upper Airspace Centre, trainee applicants must be under 27 years (Idem)). Research by EUROCONTROL (2016) (not updated) shows that the average age of ATCOs in Europe was 44.2 years, compared to an average retirement age of 61.6 years.

Indeed, while working conditions and the attractiveness of the industry are driven by strong salaries and employment protection, the issue facing the ANS industry is the growing age of ATCOs and staff shortages as these workers reach retirement. Research by EUROCONTROL estimates the ATCO shortage in Europe to be over 700 ATCOs (EUROCONTROL, 2022), compared to a total of over 17,000 ATCOs in operational duties in 2023 (EUROCONTROL, 2025). A lack of capacity from air traffic control leads to delays for airlines; EUROCONTROL estimated the cost of this delay to airlines in 2022 was over EUR 800 million (EUROCONTROL, 2022).

Other than increased recruitment, possible options to address staff shortages in the ANS industry include the relocation of ATCOs to areas with higher delay. ATCOs could work in a different sector of airspace where shortages are most impactful. The challenge to this includes retraining ATCOs to work on a different sector, which is a long process, and a reluctance of States to delegate air traffic services in their sovereign airspace to be controlled in another State remotely due to national security issues.

4.6. Ground handling industry

Ground handling is an accessible industry which does not require the same amount of training and skills as other roles in the aviation sector such as air crew, ATCOs, and engineers. However, the industry is relatively undesirable to workers; the major factor impacting working conditions in the ground handling services industry is the long hours, lack of flexibility, physical nature of work, and low renumeration (Airside, 2025). Ground handling is a competitive industry and much of this competition is driven by price (Jetmate, 2025); the need to be price-competitive forces ground handling service providers to keep staff costs low, especially because they operate on very low profit margins and the industry is heavily labour-intensive (Steer, 2023).

COVID-19 has exacerbated labour issues within the industry. With the downturn in traffic and high proportion of staff costs, ground handling service providers (GHSPs) furloughed between 60 and 70% of the workforce on average (ibid). However, following the recovery of traffic after the pandemic, ground handlers struggled to recruit workers to pre-pandemic levels (ACI, 2022); in Denmark, ground handling companies seeking to recruit new workers offered salaries 20% lower than pre-pandemic salaries, with workers who left the sector during the pandemic finding alternative employment in other sectors such as hospitality where working conditions are better (Steer, 2023).

There are also several factors that are largely outside of the control of firms but stem from the nature of the industry. These include the challenging working environment, which involves heavy lifting and exposure to the weather (ACI, 2022). Lack of career progression also makes the sector undesirable.

A shortage of workers has led to lower quality of service; flight delays in Europe increased following the pandemic due to under-resourced ground handling staff, among other reasons (ACI, 2022).

In 2025 the European Commission, alongside EASA, introduced three delegated regulations (EU 2025/20, 2025/21, 2025/22) and two implementing regulations (EU 2025/23, 2025/24). These new regulations aim at making ground handling safer through requiring the implementation of incident reporting, staff training and maintenance, which would support the attractiveness of the sector to workers through better safety culture and training.

4.7. Aviation fuel industry

The aviation fuel industry comprises employment in the production of aviation fuel, predominantly reliant on laboratory staff, engineers, and technicians involved in the production of fuels. This demonstrates that many of the Science, Technology, Engineering and Mathematics (STEM) skills required in the aerospace industry (which is facing labour shortages) are also relevant in the production of aviation fuel. In the context of increasing SAF uptake, employees will need to develop new skills and capabilities in SAF production pathways, blending ratios, and improving the performance of SAF.

There is no conclusive evidence from the existing literature, nor from the engagement with stakeholders involved in this study, on the working conditions and attractiveness of the industry. Indeed, the fact that it is not a topic under investigation within the industry indicates that it is a less significant concern for competitiveness relative to recruitment and attractiveness of the industry, as well as other aspects (such as production capacity, access to feedstocks, etc. covered in section 5.2.3).

4.8. Conclusions

- **Airline industry**: working conditions can vary depending on the role, air carrier, and region. While these practices lower costs for certain airlines, this affects the level playing field for air carriers competing with each other within the EU. The persistence of atypical forms of employment and the lower costs associated with them also means that the attractiveness of the industry to workers varies significantly across airlines.
- **Airport industry**: of the jobs traditionally directly employed by airport operators, a trend of outsourcing in security and cleaning was identified a decade ago and linked to lower social standards (such as wages, social security, training, and holiday entitlement). Recent observations on whether this trend has persisted could not be identified, although it is likely that outsourcing has persisted. While this lowers costs for the operators, it also lowers the attractiveness of the sector to workers and could lead to labour shortages in the future.
- **Aerospace industry**: a high-skilled workforce which is generally well-remunerated is a strong attractive factor to workers. The main challenge is addressing skills and labour shortages, which could impact the industry’s competitiveness. The current geopolitical environment indicates that developing necessary skills is a strategic priority not only to the competitiveness of the industry but also to the EU’s strategic autonomy in aerospace. The EU has already begun to recognise this through programmes aimed to upskill existing workers.
- **Air navigation services industry**: this industry is also characterised by highly skilled workers who are well-remunerated as part of trade union collective bargaining agreements. The job security offered in the industry can be attractive to workers; however, there remain current staff shortages which contribute to air traffic control delays in the European airspace network, with significant costs to airlines as a result. Recruiting and training new controllers is a lengthy process, as is the training for redeployment to other airspace sectors. Addressing staff shortages will enable a higher quality of service with fewer delays.
- In the **ground handling** industry, its lower-skilled, labour-intensive and highly competitive nature is less conducive to good working conditions, leading to low pay among workers. The industry cut staff during the pandemic but has not easily replaced workers as traffic has recovered, leading to some staff shortages and delays. New regulations adopted in 2025 aim to improve training provision and safety management in the industry, which is a positive development in the attractiveness of the sector.

- In the **aviation fuel** industry, many of the skills in the aerospace industry are relevant and the growing use of SAF will present new challenges for knowledge to develop.

5. IN-DEPTH ANALYSIS OF COMPETITIVENESS

KEY FINDINGS

The European aviation single market creates a competitive internal market, benefiting consumers.

External aviation policy aims to increase connectivity on the basis of reciprocity and a level playing field for competition. However, the effectiveness of some measures to protect fair competition is unclear.

Aerospace is a key strategic sector for the EU; the EU industry currently performs well on the global stage but could be supported further to boost its strategic autonomy, including securing access to raw materials. The EU has a strong position in relation to new aircraft propulsion technologies.

The EU's aviation decarbonisation policy has a higher level of climate ambition than comparator third countries, which contributes to higher costs faced by EU carriers versus competitors and may drive traffic towards non-EU airlines and airport hubs.

The EU is among world leaders in SAF production but is currently reliant on imported feedstocks and has no commercial e-SAF production facilities, despite its inclusion in the ReFuelEU Aviation mandate from 2030 onwards.

Higher energy costs in the EU compared to competitors put SAF production and aerospace at a cost disadvantage, impacting their competitiveness.

EU passenger demand is forecast to grow at a lower rate than third country comparators between 2025 and 2053, highlighting the importance of addressing factors affecting its competitiveness, such as the regulatory environment, in order to maintain the relative strength of the industry.

5.1. Introduction

This chapter analyses the competitiveness of the EU aviation sector across the value chain and in comparison with non-EU competitors. The analysis is structured by each of the competitiveness drivers presented in section 1.4. It builds on the findings for the **economic** and **financial** drivers from chapters 2 and 3, and the human resources findings related to the **infrastructure & resources** driver in chapter 4, as well as of the **regulatory** and **aero-political** competitiveness drivers. The chapter also provides an assessment of how possible future scenarios may develop and their implications for the competitiveness of EU aviation. The findings of this chapter form a key part of the basis for the recommendations made in Chapter 6.

5.2. Analysis of competitiveness of the EU aviation sector by competitiveness driver

5.2.1. Aero-political

The Chicago Convention of 1944 established the regulatory framework governing international aviation, including the use of bilateral air services agreements between countries in order to operate international flights. Air services agreements form the basis for international aviation through the granting of 'traffic rights', which establish the rules for air carriers to operate to, from, and over another state's airspace.

Air services agreements have liberalised over time, opening up international aviation markets to greater market access and more competition. The extent to which traffic rights are granted are known as the 'freedoms of the air' (OECD/ITF, 2010) which represent increasing levels of liberalisation. The freedoms range from the right to overfly a country's airspace (the first freedom) to the right for foreign carriers to freely operate domestic services outside of their home country (the ninth freedom). The traffic rights granted in these air services agreements are therefore of crucial importance to the competitive balance between local and foreign carriers.

a. European single market for aviation

The development of a European single market for aviation in the early 1990s moved the European aviation market from a reliance on bilateral agreements between Member States to the liberalised market in place today (European Commission, 2020). The current Regulation 1008/2008 establishing the European single market for aviation has been successful in creating a more efficient market, removing barriers to entry for new competitors, and increasing the range of fares available to consumers (European Commission, 2020). In particular, the freedom for all EU carriers to provide intra-EU services in the internal market, subject to being majority owned and effectively controlled by EU nationals, and harmonised rules on operating licences and leasing are contributing to an efficient internal market (Idem).

b. Access to/from third country aviation markets through air services agreements

In 2005, the EU set out to bring bilateral air service agreements with third countries in line with Community law[20] by amending bilateral agreements between Member States and partners and negotiating horizontal agreements between multiple Member States and partner countries (COM(2005) 79). This remains ongoing; a 2012 communication noted that EU carriers operate in a market "characterised by diverse regulatory frameworks and cultures, by bilateral air services agreements which restrict market access, and by competition that is often distorted in third countries by unfair subsidies or practices such as over-flight restrictions" (COM(2012) 556). Where supported by Member States, the European Commission can be given a mandate to negotiate an EU-level "Comprehensive Air Transport Agreement" (CATA) with one or more third countries, such as that agreed with the USA in 2007 and updated in 2010.

The benefit of the EU negotiating agreements with third countries is that it allows for a level playing field between EU and non-EU carriers, and grants access to the EU market on the basis of reciprocity. Examples of this include the harmonisation of traffic rights between all EU Member States and the third

[20] In particular, the inclusion of nationality clauses in existing bilateral agreements prevented equal market access to EU carriers depending on their home base was deemed to be inconsistent with the right of establishment in Article 43 EC Treaty.

country, and the inclusion of a fair competition clause in all EU comprehensive aviation agreements (European Commission, 2025).

However, the EU-Qatar air transport agreement concluded in 2021 has been criticised by some EU carriers due to the perception that the enforcement of such clauses is not sufficiently strong and because the benefits of open skies agreements offer substantially more benefits to third country carriers accessing the EU market than EU carriers accessing third country markets such as, in particular, Qatar (Lecca, 2025) which has no domestic market. However, ACI EUROPE (2026) noted in a statement that Qatar Airways' seat capacity deployed in Europe in the winter 2025/2026 season was -10% below 2019 levels before the agreement was signed, which suggests that in practice the agreement has not resulted in a substantial market distortion on seat capacity.

Where EU-level CATAs do not exist and traffic rights remain governed by bilateral agreements, there can be an impact on market access for non-EU carriers and vice versa. For example, the possible revision to the Air Services Regulation (Regulation 1008/2008) notes in its open public consultation that non-EU carriers can operate certain intra-EU routes due to provisions in bilateral agreements with Member States without the same requirements as EU carriers established under Regulation 1008/2008 (such as taxation, competition and labour law requirements).

c. State aid policy

State aid policy in the EU is applied to the aviation sector in order to create a level playing field for intra-EU competition, which ultimately aims to improve the competitiveness of the airport and airline industries (European Commission, n.d.). The Guidelines on State aid to airports and airlines (2014/C 99/03) indicate that State aid in the EU is permitted only under specific circumstances where competition is not unfairly distorted and where there is a demonstrated contribution to an objective of common interest (such as increased mobility of citizens, reduced air traffic congestion, or regional economic development).

The EU adopted a State Aid Temporary Framework in response to the COVID-19 pandemic which allowed greater flexibility in Member States providing support to businesses to preserve their continuing economic activity during the crisis, compensate for damages caused by the pandemic and associated impacts, and liquidity support to businesses with urgent liquidity needs. This helped to minimise the number of bankruptcies in the aviation sector during the crisis (Steer, 2023), although some of the aid granted to air carriers during the crisis has since been annulled (e.g. Court of Justice of the European Union, 2023; Court of Justice of the European Union, 2024).

Outside the EU, State aid policy is generally more relaxed (see Table B.1 in Annex B) and, as a result, the use of State subsidies for airports and airlines has fewer restrictions. This has historically led to concerns that European airlines face a competitive disadvantage against third country carriers, in particular, carriers from the United Arab Emirates and Qatar, which have benefitted from subsidies, government loans, and shareholder capital injections from the government (Europeans for Fair Competition, 2015). More recently, chief executives from Air France-KLM and Lufthansa stated that Turkish and Gulf carriers had leveraged state support, amongst other factors, to rapidly grow their presence in Europe to the detriment of EU air carrier competitiveness (Les Echos, 2025).

A measure to address fair competition with third country carriers through bilateral agreements is Regulation 2019/712, which allows EU carriers to seek redressive measures through the European Commission if it considers that it faces unfair competitive practices (such as State aid to third country carriers). It is not publicly known whether air carriers have raised any proceedings through the Regulation, and there is no evaluation to assess its effectiveness at ensuring fair competition between EU and non-EU carriers.

d. Russian overflight restrictions

In response to the military attack on Ukraine by Russia in 2022 and the ongoing war, the EU (through Council Regulation (EU) 2022/334) and Russian Federation both banned each other's respective air carriers from overflying their territories. The immediate impact was that direct flights to/from Russia were de facto banned, and flights to Asia that previously relied on overflying Russian airspace had to divert existing routes around Russian airspace, either to the north via the Arctic Circle or to the south over the Balkans and Middle East (Steer, 2023). The longer flight routes added additional flight time for EU carriers of up to 4 hours depending on the extent of the diversion. Longer flight distances also incur higher fuel burn and thus higher operational costs for airlines, making these routes less competitive than before (idem).

Chinese carriers are not subject to the ban on Russian airspace and continue to overfly Russia as the most direct routing to reach Europe. Carriers from countries in the region such as Japan and South Korea are not subject to the Russian ban, but for safety reasons these carriers also do not overfly Russian airspace (CAPA, 2022; Lee, 2022), hence the competitive impacts focus on Chinese carriers.

The market share of Chinese carriers on routes to/from Europe was around 77% in 2024 compared to 50% before the pandemic; in some Member States such as Italy the market to China was entirely served by Chinese carriers (Letta, 2024). Some EU carriers most impacted by the restrictions, such as Finnair which previously had 50% of its traffic serving Asia, have restructured their network model to focus more on connections to North America as well as intra-EU connectivity (Steer, 2023).

Analysis from OAG Schedules Analyser data also demonstrates that, on routes competed to China with Chinese carriers, EU carriers experienced longer flight times in 2025 by between +4.1% and +39.2%. European carriers have become less competitive on these routes, as indicated by the changes in route-level seat capacity share shown in Table 5.1 below.

Table 5.1: Flight times and change in seat capacity share on routes to China 2019-2025

EU airport	China airport	Carrier	Flight time (mins)	Difference (%)	Route seat capacity share, 2019	Route seat capacity share, 2025
Paris-Charles de Gaulle (FR)	Beijing Capital	Air France	673	+11.1%	49.4%	32.2%
		Air China	606		50.6%	67.8%
Paris-Charles de Gaulle (FR)	Shanghai Pudong	Air France	760	+10.5%	48.5%	40.0%
		Air China	n/a		13.5%	0.0%
		China Eastern	688		38.0%	60.0%
Helsinki (FI)	Shanghai Pudong	Finnair	739	+39.2%	70.4%	41.6%
		Juneyao Airlines	531		29.6%	58.4%
		Lufthansa	610	+4.1%	54.8%	44.9%

EU airport	China airport	Carrier	Flight time (mins)	Difference (%)	Route seat capacity share, 2019	Route seat capacity share, 2025
Munich (DE)	Beijing Capital	Air China	586		45.2%	55.1%
Munich (DE)	Shanghai Pudong	Lufthansa	693	+5.0%	70.0%	67.1%
		Air China	660		30.0%	32.9%

Source: Steer analysis of OAG Schedules Analyser data.

There are limited options available for the EU to remedy this imbalance, because the traffic rights are governed by bilateral agreements between China and individual Member States and are not uniform.

5.2.2. Regulatory

a. Regulatory environment of the aviation sector

The regulatory environment for aviation has a global framework set by the International Civil Aviation Organisation (ICAO), an agency of the United Nations (UN). While voluntary, this framework is generally closely adhered to by most states around the world, but requires a high level of consensus to implement changes. Within the EU, the "regulatory acquis" for aviation includes a number of Directives and Regulations covering, *inter alia*, air services, air safety, air navigation, environmental rules, airport charges, ground handling and competition. It goes beyond the ICAO framework and sets up a common framework for regulation of the sector within the EU/EEA. In many areas, the EU acquis goes significantly beyond the level of regulation in other jurisdictions.

Table B.1 in Annex B highlights the main aspects of the aviation sector regulatory framework for the EU and comparator third countries (USA, China, Canada, Türkiye, Qatar). This includes environmental policy on emissions trading, SAF, fuel taxation, Monitoring, Reporting and Verification (MRV), and flight emissions labelling; the economic ownership and regulation of airports and ANSPs; air passenger rights; and rules on State aid provision in the sector. The main findings from Table B.1 are summarised below.

- The EU has higher levels of climate ambition such as its policy on emissions trading (EU ETS) which is not matched by third country comparators. The ICAO CORSIA scheme is the predominant market-based measure in use internationally, but is less ambitious as the EU ETS sets a reducing emissions cap over time, whereas CORSIA is an emissions offsetting scheme and does not require any reductions in emissions per se (Umweltbundesamt, 2023).
- The EU SAF mandate under the ReFuelEU Aviation Regulation is mirrored only in a few other jurisdictions and other mandates, such as those announced for Türkiye, which are generally less comprehensive. Other countries use incentive-based mechanisms with financial incentives such as tax breaks for production and use. The use of fuel taxation is mixed. Only the EU was identified to require the reporting of non-CO_2 impacts of aviation and environmental labels.
- Ownership and control of airports and ANSPs is typically more market-based than in comparator third countries, with stronger oversight and economic regulation used. Air passenger rights are more mature in the EU and the use of compensation for inconvenience is uncommon elsewhere. Finally, the EU has relatively restrictive rules in place for the use of State aid to prevent competitive

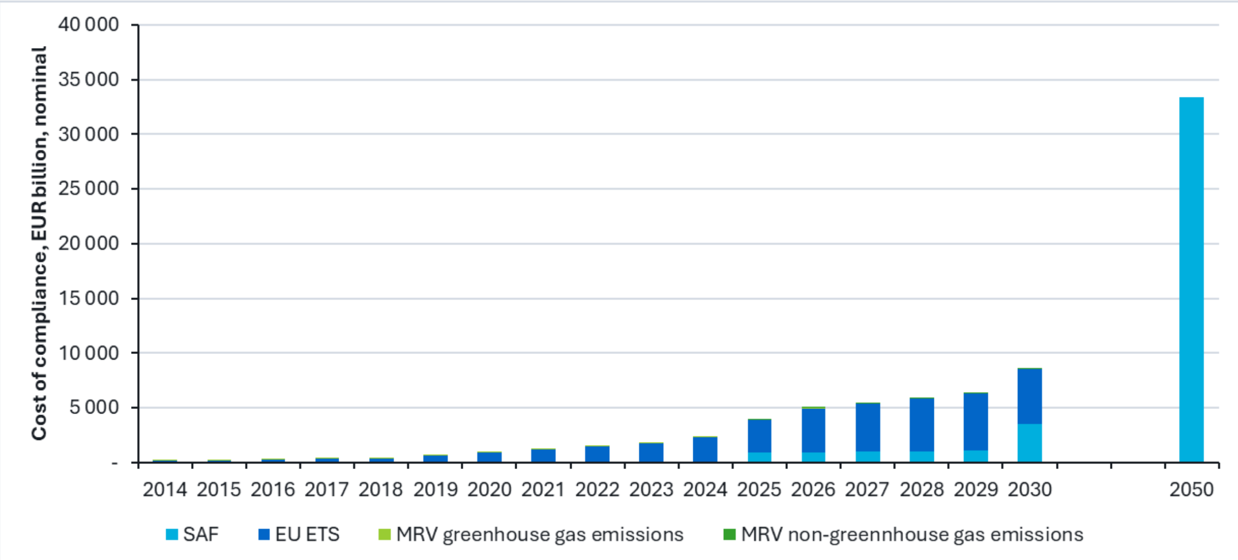
distortions; comparators do not have a general prohibition of State aid unless necessary, but govern the use of State Aid under national competition law.

b. Decarbonisation policy in the EU versus comparator third countries

As identified in Table B.1, the decarbonisation policy in the EU has a higher level of ambition compared to its major third country comparators, the USA and China. In particular, the mandated SAF blending for flights departing the EU, the inclusion of intra-EU flights in the EU ETS and cost of associated carbon credits, MRV requirements for CO_2 and non-CO_2 climate impacts and the requirement of a flight emissions label (C(2024) 8795) all go beyond the national and international requirements applicable to comparator third countries.

A research study by Steer (2025) for the airline trade association Airlines for Europe (A4E) found that the estimated cost of compliance for its member airlines (representing 67% of departing passengers in the EEA in 2024) due to the EU ETS and SAF mandate requirements will be EUR 7 billion in 2025; the increasing requirements to 2050 will increase the financial cost to airlines significantly, including an estimated EUR 33 billion in SAF costs by 2050 (Figure 5.1). On a per-passenger basis[21], the cost of compliance increased from EUR 0.37 in 2014 to EUR 7.57 in 2025 (of which EUR 1.76 is ReFuelEU Aviation compliance and EUR 5.85 is EU ETS compliance), and is projected to increase to EUR 15.02 per passenger (of which EUR 6.23 is ReFuelEU Aviation compliance and EUR 8.78 is EU ETS compliance) in 2030 for the environmental policies described below (ReFuelEU Aviation, EU ETS, MRV).

Figure 5.1: Estimated cost of compliance with EU environmental policy for Airlines for Europe member airlines, 2014-2050



Source: Adapted from Steer (2025).

The cost of compliance with the environmental policies of the EU does not necessarily directly impact on route-level airline competition, given that EU carriers are not subject to the ETS on extra-EEA flights (where CORSIA is applied), while non-EU carriers are subject to the ETS on intra-EEA flights; SAF mandates apply to flights departing EU airports, regardless of the carrier's domicile. However, in some specific situations there can be a direct route-level competitive impact on EU carriers. For connecting

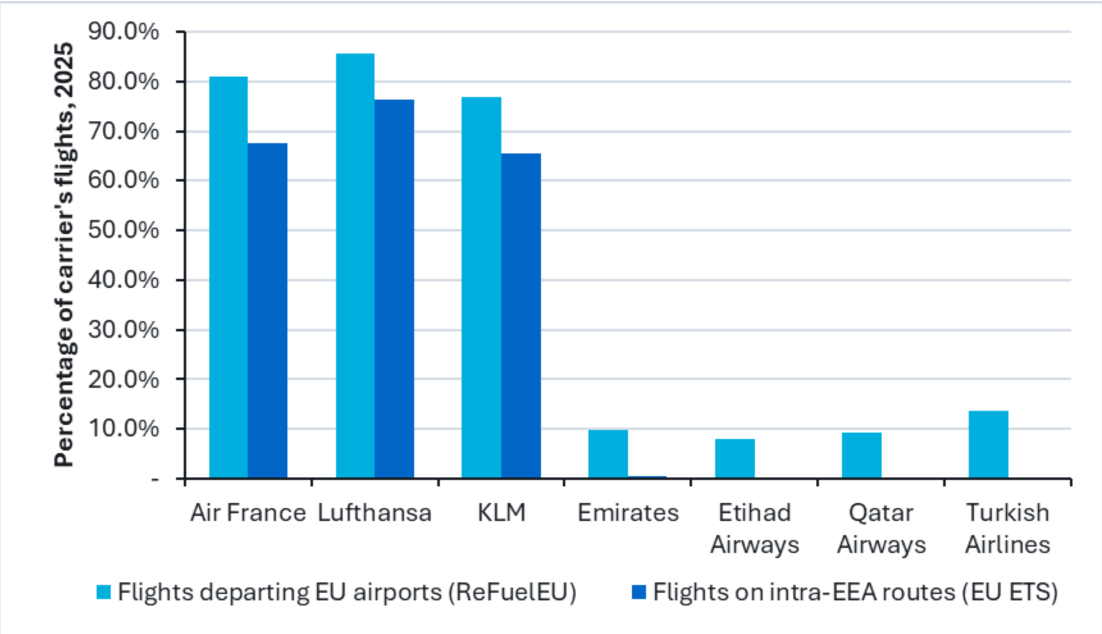
21 The data to calculate the per-passenger cost of compliance is not published in the Steer (2025) report, but was shared by its authors to be included in this study.

traffic via EU hubs, ReFuelEU and ETS costs apply to both flights arriving at and departing from the connecting hub, whereas for connections via non-EU hubs, the flight from the non-EU hub to another non-EU destination (and vice versa) is entirely outside the EU/EEA and hence not subject to the costs associated with those policies (unless the relevant hub's territory applies its own equivalent policies). As an example, a flight from Nice to Tokyo connecting via Paris-Charles de Gaulle is subject to the EU ETS on the Nice-Paris flight and subject to the ReFuelEU Aviation requirements departing both Nice and Paris. If the connection is made in Istanbul instead of Paris, the EU ETS is not levied on either flight (i.e. not intra-EEA), and the ReFuelEU Aviation requirements only apply to the Nice-Istanbul flight.

More broadly, the impact on competitiveness is caused by the additional costs at a macro level borne by EU carriers (i.e. those predominantly impacted by the ETS with many intra-EEA flights) having a knock-on impact on the carrier's overall cost base, which impinges their ability to compete on fares with non-EU carriers on contested routes. The higher the proportion of intra-EEA flights or flights departing EU airports in an air carrier's route network, the higher the proportion of its operations are subject to the ReFuelEU and ETS costs. Carriers facing these costs can either absorb the additional costs involved or pass these onto consumers through higher ticket prices; the latter has a clear negative competitive impact as higher ticket prices would lower the carrier's competitiveness versus other carriers with less exposure to the ReFuelEU and ETS costs. Carriers choosing to absorb these additional costs would not directly lose competitiveness on ticket prices, but it would reduce their profitability and lower their ability to invest in growth and new technologies over time relative to competitors.

Figure 5.2 below shows that FSCs from non-EU countries are relatively less exposed compared to EU FSCs, demonstrating the scale of the competitive impact that EU carriers face.

Figure 5.2: Percentage of flights in scope of ReFuelEU and EU ETS, selected EU vs. third country carriers, 2025



Source: Steer analysis of OAG data.

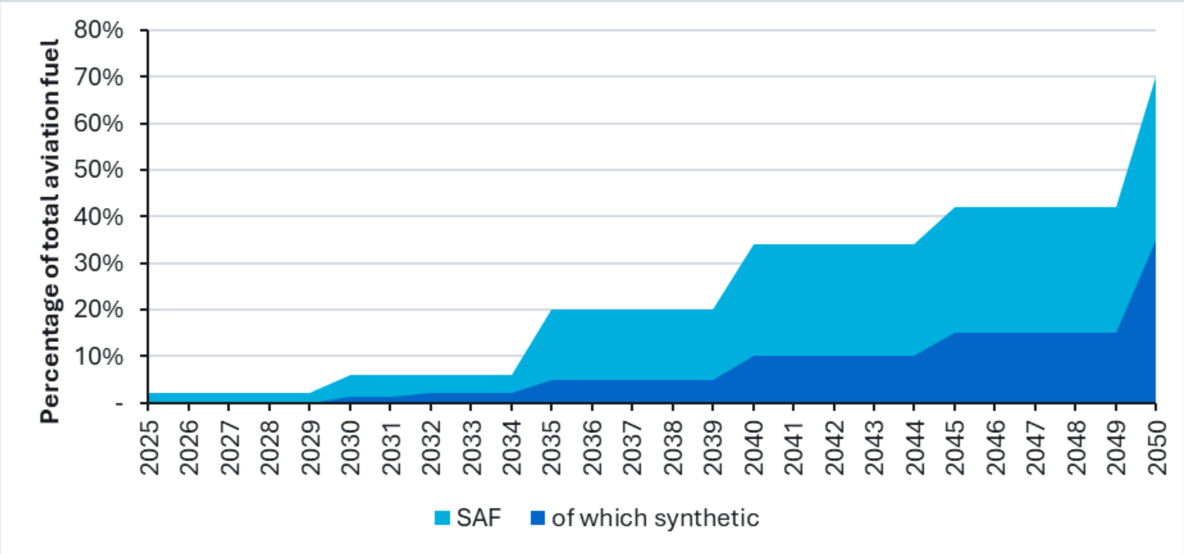
The competitive impact for EU FSCs, which typically operate using a hub-and-spoke model reliant on major hub airports (see 2.4.1), also has a knock-on impact for the competitiveness of these hub airports which rely on FSC traffic for its operation. The impacts on airports are developed in 5.2.2c.

i. Sustainable Aviation Fuels (SAF) policy

The aviation industry globally has a target to reach net zero emissions by 2050, set out by an ICAO "Long-Term Aspirational Goal" (LTAG) across ICAO Member States. The single largest contribution to achieving this reduction in emissions is the uptake of SAF globally; around 65% of emissions reductions are expected to come from SAF (IATA, 2022).

In 2023 the EU introduced the ReFuelEU Aviation regulation (2023/2405) establishing minimum requirements for the blending of SAF[22] in fuel supplied to EU airports and used by aircraft on flights departing the EU. Commencing in 2025, a minimum requirement on the use of SAF gradually increases in 5-year increments, reaching a final mandate of 70% by 2050, of which 35% of aviation fuel used on flights departing EU airports must be synthetic aviation fuel (i.e. not produced from biomass, also known as e-SAF). This is shown in Figure 5.3.

Figure 5.3: ReFuelEU aviation mandated share of SAF and synthetic aviation fuel of total aviation fuel



Source: Steer adaptation of Regulation (EU) 2023/2405.

ii. SAF prices versus conventional jet fuel

The EASA 2024 Aviation Fuels Reference Prices for ReFuelEU Aviation indicate that the average market price of aviation biofuels was EUR 2,085/tonne in the EU compared to EUR 734/tonne for conventional jet fuel in 2024 (i.e. 2.8 times higher). While there is no market price established for synthetic aviation fuels (or e-SAF), the estimated current production cost is EUR 7,695/tonne, over 10 times larger than the market price for conventional aviation fuel.

e-SAF is currently the most expensive SAF produced owing to very low levels of production as well as the cost of renewable energy used in its production , which is anticipated to reduce substantially over time (Project SkyPower, 2024). As the cost of renewable energy decreases and e-SAF production capacity ramps up, it has the potential to be a more affordable form of SAF by 2050 (World Economic

[22] SAF is defined as aviation fuel that is either synthetic aviation fuel, aviation biofuel, or recycled carbon aviation fuel (Art. 3(7), Regulation (EU) 2023/2405), each of which is defined separately in Regulation (EU) 2018/2001. SAFs can be produced from biomass, from recycled carbon, or synthetic aviation fuel from non-biological origin. Because SAF uses either recycled carbon or biomass it is considered to be relatively carbon neutral over its full lifecycle, as the carbon emissions from SAF combustion are partly counterbalanced by the abstraction of carbon dioxide during the growth of the biomass or in the production process of the synthetic aviation fuel. Synthetic aviation fuel uses captured carbon, water and renewable energy and has a lower net carbon footprint than conventional SAF from biomass.

Forum, 2022). e-SAF is also a more sustainable type of SAF as it can reduce CO_2 emissions compared to jet fuel by over 90% and it does not require biomass or biological feedstocks and therefore does not contribute to biodiversity loss (Project SkyPower, 2024).

The cost of e-SAF is also impacted by the high degree of concentration in the EU aviation fuel supply market, with few suppliers at each airport. IATA indicated that as a result, fuel suppliers often levy a surcharge to airline customers, thought to be around twice the current market premiums (IATA, 2025), leading to prices over four times the price of conventional aviation fuel (IATA, 2025). In some cases, fuel suppliers are suspected of passing on surcharges that pre-empt possible financial penalties for non-compliance as set out in the Regulation[23], although this claim has not been possible to verify independently.

Additionally, IATA (2025) notes a difference in the flexibility mechanism under ReFuelEU Aviation and the rules to claim SAF under the EU ETS, which IATA[24] suggests currently leads to a situation where airlines do not know if they have received the SAF they have paid for and cannot claim it under the EU ETS. This claim could not be independently verified. IATA[25] recommends a SAF accounting system be developed in the EU, matching the level of flexibility between the EU ETS and ReFuelEU Aviation and allowing air carriers to claim the environmental benefits using this level of flexibility.

iii. Absence of SAF mandates in comparator third countries

As shown in Table B.1, the extent to which SAF mandates exist elsewhere in comparator third countries is limited. Only Türkiye has introduced a SAF mandate as of 2025, but this only extends as far as 2030 and is intended to support compliance with CORSIA through a 5% reduction in emissions. This creates both a unique opportunity for Europe to be at the forefront of global SAF production and supply, but also a higher fuel cost for airlines. The mandate also sets a clear requirement for the proportion of SAF to be produced and gives greater investor certainty on future demand. In comparison, other policies in other jurisdictions (such as incentives in the USA for SAF production) are market-based and stimulate SAF production and supply through lowering the effective cost of production and supply with tax credits. Both policies are ultimately aiming to achieve the same goal – to lower the price of SAF and increase uptake – but do so in different ways. The SAF mandate aims to stimulate economies of scale and thus lower costs by requiring greater levels of production and supply of SAF over time, whereas incentives lower costs to stimulate greater levels of SAF production and supply.

A caveat is that mandates and targets are important to demonstrate a clear pathway to decarbonisation; in contrast, incentives encourage changes in behaviour but do not set requirements in the same way a mandate/target does. Another approach could be to combine existing mandates and targets to set clear expectations with incentives to minimise competitive distortions. The use of free SAF allowances in the EU ETS is an example of this approach, where the use of SAF allows airlines to claim free ETS allowances. Not only does this incentivise the uplift of SAF, but it also supports compliance with the EU ETS by reducing the effective cost of carbon for airlines (the use of SAF does not require emissions allowances to be surrendered). As a result, airlines have fewer credits to purchase because a) they are emitting less due to using SAF, and b) they are allocated free allowances, reducing compliance costs for airlines.

One key benefit of the SAF mandate is the regulatory certainty it provides to the aviation sector (notably air carriers and fuel suppliers), which are thereby aware of the required SAF uptake to 2050.

[23] Information collected as part of an interview for this study.

[24] Information collected via interview for this study.

[25] Information collected via interview for this study.

This benefit of this regulatory certainty depends on confidence that the mandated percentages of SAF will remain applicable in the future. If production and supply is slower than anticipated, fuel suppliers would face financial penalties; but as shown above these penalties can be passed on to airlines through surcharges, ultimately impacting on airlines' costs, which are likely to be passed on to passengers through higher air fares. In contrast, incentive-based policies using tax credits, while providing less certainty on the volumes of SAF produced, are less likely to result in outcomes which would *de facto* create higher costs for airlines and consumers.

iv. Analysis of potential policy measures for ReFuelEU Aviation

A review of the existing literature and consultation with stakeholders as part of this study identified the following policy options to boost competitiveness within the ReFuelEU Aviation framework:

- a SAF border adjustment mechanism (akin to the existing carbon border adjustment mechanism Regulation (EU) 2023/956) (A4E/Deloitte, 2025), whereby passengers on itineraries using flights not subject to the provisions of ReFuelEU Aviation would be charged an equivalent amount to remove the cost differential between flights in scope and out of scope of ReFuelEU Aviation;
- charging higher carbon prices on flights via non-EU hubs to reduce the cost incentive to divert to non-EU destinations (Air Services Regulation open public consultation);
- offering SAF allowances to lower costs on routes at risk of hub/destination switching to reduce the cost incentive to divert to non-EU destinations (this measure has already been used by the European Commission in 2024, totalling EUR 100 million worth of free allowances);
- a 'revenue certainty mechanism', which would allow fuel suppliers to receive a guaranteed minimum price of SAF and support greater investor certainty in the development of production facilities (recognised in the Sustainable Transport Investment Plan (STIP), p.11). This could take the form of contracts for difference, double-sided auctions, or revenue guarantees; and
- a 'book and claim' system (suggested by multiple stakeholders, including a joint letter by 15 trade associations in the aviation sector) where customers book an amount of SAF which is then supplied to an airport close to the production facility, effectively replacing an equivalent amount of conventional jet fuel. This means that the SAF requested is being delivered to the overall system, but does not necessarily go to the customer requesting it[26].

On the first two measures, while these would seek to reduce or eliminate the cost advantage that non-EU air carriers would have currently, the legal feasibility is not clear as the Chicago Convention requires charges to be linked solely to the "right of transit over or entry into or exit from its territory of any aircraft" (Article 15). This argument is developed by Lexavia (2022) which notes that a SAF-Border Adjustment Mechanism (SAF-BAM) being applied to a passenger's onward itinerary from a third country hub could be considered as extraterritorial application of EU law, analogous to the existing Carbon Border Adjustment Mechanism (Regulation (EU) 2023/956).

SAF allowances have already been used in a limited way in the EU; while the free allowances are supportive of increased SAF uptake and reduced expenditure on ETS allowances, the current scheme is limited and the benefits have been small as a result (IATA, 2025).

A revenue certainty mechanism is more directed at incentivising greater supply of SAF, which could improve the economies of scale in SAF production and lower the cost of SAF to airlines as a result. The

[26] It functions similarly to renewable energy in the electricity grid where it is not feasible to deliver renewable energy only to specific customers requesting it, but is rather delivered in the aggregate supply.

issue is already highlighted in the Sustainable Transport Investment Plan (STIP), and described in more detail in 5.2.3.b.

A book and claim system would need to be coherent with the Renewable Energy Directive (RED) quotas for national production (under the RED, some Member States have specific mandatory targets for SAF production). This would require a central registry that can be linked to national production so that Member States can verify their compliance with SAF production requirements. A book and claim system would allow greater flexibility for SAF production and effectively create an EU-wide marketplace for SAF production, driving competition and lower prices. However, a study by Ricardo (2024) for Transport & Environment highlights that this measure may be more beneficial to large fuel suppliers with a wider range of airports to supply than smaller producers, which could further increase market concentration as previously described in 2.4.6.

v. Carbon pricing and the EU Emissions Trading System (EU ETS)

The EU Emissions Trading System (EU ETS) is a cap-and-trade carbon pricing mechanism applied across polluting industries in the EU economy, including aviation since 2012. The system works by setting a cap on emissions and allowances for carbon emissions; the total number of allowances form the cap on emissions (one allowance is equivalent to emissions of one tonne of CO_2). The system allows for emissions allowances to be traded freely enabling the most economically efficient abatement of emissions. The cap on emissions can gradually reduce over time in order to reduce the total emissions; the increasing scarcity of allowances further provides an economic incentive to decarbonise.

The ICAO initiative Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) is the international aviation carbon pricing mechanism. CORSIA is a global offsetting scheme which requires air carriers and operators to offset any growth in CO_2 emissions that exceed 85% of 2019 levels. CORSIA is only implemented on international flights; domestic emissions for aviation are not included, but may be covered by each state's commitments under the Paris Agreement.

The EU ETS initially covered all flights departing from or arriving at airports within the EEA, however flights to extra-EEA destinations were temporarily excluded from the EU ETS to support the development of CORSIA. The recent revision to the EU ETS clarified that for flights within the EEA, only the EU ETS will apply (i.e. no double coverage through the EU ETS and CORSIA). For extra-EEA flights, CORSIA applies and the EU ETS does not.

The climate ambition of the EU ETS and price signal to encourage decarbonisation are much stronger compared to CORSIA. This is because CORSIA is an offsetting scheme with no cap on emissions, instead relying on the price signal from offset credits to incentivise a reduction in CO_2 emissions. In addition, the carbon price for CORSIA is substantially lower than the EU ETS; data from Energy Instrat (2026) found that the average carbon price per tonne of CO_2 emitted for the EU ETS in 2026 to date is EUR 77.91. Bloomberg (2026) estimates that the carbon price per tonne of CO_2 emitted in CORSIA would be USD 12.40 in 2026 (approx. EUR 10.65, assuming 1 USD = 0.86 EUR). However, from 2027, the carbon price of CORSIA is forecast to increase to USD 96.50 (approx. EUR 83, assuming 1 USD = 0.86 EUR) per tonne as CORSIA becomes mandatory. If this materialised, it would bring the cost of carbon of CORSIA and the EU ETS broadly into line, thus reducing the competitive impact faced by EU carriers.

The European Commission plans to conduct an assessment of the effectiveness of CORSIA in 2026 before determining whether to adapt the EU ETS. The future direction of EU ETS policy and its effect on competitiveness is therefore uncertain; for example, the scope of the EU ETS may be proposed to be expanded if insufficient progress has been made by CORSIA in the review. However, an extended EU ETS may risk retaliation from non-EEA countries now subject to EU ETS costs where they previously were not.

vi. Taxation of fuel

The European Commission proposed an end to the tax exemption for aviation fuels as part of a revision of the Energy Taxation Directive (ETD), included in its Fit for 55 policy package. The revision (as of 2025) has not been achieved due to ongoing disagreements between Member States, as it requires unanimous support from the Council to pass. It is the only proposal from the Fit for 55 package that remains to be adopted.

The existing directive includes a mandatory exemption on taxes on aviation fuels for intra-EU flights, meaning that Member States can apply taxes for domestic or on bilateral flights if the other Member States agrees (European Parliament, 2022).

The proposed ETD revision aims to reduce the price differential between conventional jet fuel and SAF. In comparison, in the USA the tax credits and grants available for SAF production aiming to stimulate economies of scale also have the same intention, but rely more on lowering the price of SAF rather than increasing the effective cost of using jet fuel.

The knock-on impacts of increasing costs were analysed by Transport & Environment (2022), a nonprofit group for clean transport, and described in more detail in 5.2.2c. The study specifically analysed a change in the ETD proposal where a kerosene tax is levied on all departing flights (to EU and non-EU destinations); it found that flights to East Asia remained cheaper for airlines flying a direct route, but to South-East Asia there would be a marginal cost saving in diverting via Dubai or Istanbul to avoid paying this tax (although this is less than 1% of operating costs saved per flight; accounting for the value of travel time of passengers more than offsets this apparent benefit).

In contrast, IATA indicated that it would anticipate the ETD as proposed to double the cost of conventional jet fuel within 10 years of its implementation, with substantial impacts on flight activities within the EU. These impacts would be disproportionate across the EU, as much of the taxation revenue would be collected in the Member States where the fuel is uplifted and is therefore concentrated on the largest aviation markets. Other Member States with smaller aviation markets would not materially benefit from the collection of additional taxation revenue but connectivity would suffer due to higher fuel costs for airlines operating these routes[27]. The airline trade association Airlines for Europe (2023) considered that the proposed ETD revision would materially increase the likelihood of "carbon leakage", where passengers divert to non-EU airports where the EU decarbonisation policies do not apply; the findings are described in 5.2.2c.

The ETD revision proposal is currently frozen and will resume only if a future Presidency decides to reopen the file.

vii. Other (monitoring, reporting, and validation requirements; flight emissions label)

The EU aviation sector has a Monitoring, Reporting and Verification (MRV) requirement as part of the EU ETS for both the CO_2 effects and non-CO_2 effects of aviation on the climate. Non-CO_2 effects consider the impact of aviation on the climate due to contrails, NO_x emissions, and soot particulates from engines. While the MRV for CO_2 impacts is well-established and replicated in other comparator third countries (see Table B.1), the recent inclusion of MRV requirements for non-CO_2 impacts of aviation is unique to the EU's regulatory framework.

[27] Shared by IATA in an interview for this study.

Similarly, the EU also introduced a voluntary regulation for flight emissions labels in 2025, allowing EU and non-EU air carriers departing EU airports to demonstrate the flight emissions data in a simple and transparent manner to consumers.

In both cases, the requirements set out are not onerous for air carriers (the latter is voluntary) and given they are designed to inform on the climate impact of flights, they are not considered to impact competitiveness materially.

c. Airline competition across EU and third country airport hubs

The differences in climate policies and ambition between the EU and comparator third countries outlined in Table B.1 place higher costs of compliance on EU air carriers, as explained in section 5.2.2b. Because these higher costs are likely to be at least partially passed on to passengers through increased air fares, there is a risk that the higher level of climate ambition in the EU may indirectly result in the diversion of traffic to third countries at the EU's frontier. The differences in hub competitiveness are shown in 3.4.2.b.

The impact on competitiveness arises from the fact that flights via non-EU hubs are neither subject to the EU ETS nor ReFuelEU Aviation requirements on the flight departing the non-EU hub. These flights via non-EU hubs do not incur the additional costs faced by flights to/from EU hub airports under the EU ETS or ReFuelEU Aviation policies, and hence the costs of operating the flight (and likely passenger fares) are lower for flights via non-EU hubs. As a result, EU hub airports and hub airlines based there become less competitive than non-EU airport hubs and airlines, encouraging a diversion of traffic away from EU airport hubs and airlines and towards non-EU airport hubs and airlines.

The impact on competitiveness is due to carbon leakage (described in 5.2.2vi). Evidence on this is mixed; Transport & Environment (2022) did not find evidence that the Fit for 55 policy package, including ReFuelEU Aviation and the EU ETS, would lead to carbon leakage on long-haul routes to East Asia and South-East Asia. It found that for routes from the EU to East Asia and South East Asia, the proposed EU climate measures including ETD did not yield an economic incentive to divert traffic with a stop at either Dubai or Istanbul compared to a direct flight from an EU airport. This conclusion is on the basis of a) longer distance travelled and higher fuel/aircraft costs due to diverting via either Istanbul or Dubai, b) additional crew costs due to longer flights, c) payment of airport charges at Dubai or Istanbul, and d) given the economic value of time, passengers faced with longer flights would prefer shorter, more direct routings. The study found that the first three reasons alone more than offset the higher costs incurred in the EU climate measures, while the value of time would compound carriers' ability to attract passengers with lower fares on routes diverting to non-EU hubs. This research was conducted prior to the closure of Russian airspace to EU carriers, which would materially influence the comparison.

On the other hand, research by Steer (2022) for Airlines for Europe focused on diversions to peripheral third countries such as Türkiye as final destinations (rather than as connecting hubs) and estimated that the ETS and proposed ETD would lead to significant carbon leakage and the loss of around 77 million passengers to non-EU airports by 2030.

A more up-to-date study by Deloitte (2025) for Airlines for Europe found that in 2024, the difference in cost between a route from Nice to Tokyo connecting via Istanbul would be -9.4% lower per passenger compared to connecting via Paris Charles de Gaulle. By 2030, the cost differential would increase to a 15.0% reduction in cost per passenger for flights connecting via Istanbul compared with those connecting via Paris-Charles de Gaulle. It estimates that, in 2030, the cost differential would reduce demand for EU carriers by -2.9%, of which approximately two-thirds would be gained by carriers with a non-EU hub.

The diversion of traffic to non-EU destinations places EU carriers at a competitive disadvantage to the non-EU carriers with established operations at the respective airports. It indicates that the higher level of climate ambition, while not questioned in terms of its necessity, is creating knock-on impacts on the competitiveness of the European aviation industry that have not yet been addressed. However, the quantitative evidence for this between research commissioned by stakeholders is varied, although the findings from 2.4.1.b show that Türkiye's air connectivity is less developed than Germany, Italy, Spain, and France. As a result, the extent to which a traffic diversion to peripheral hubs currently happens is not conclusive.

5.2.3. Infrastructure & Resources

a. SAF feedstocks

In 2024, the SAF produced in the EU primarily used biological sources such as used cooking oil and waste animal fats (EASA, 2025). Very little synthetic SAF is used in the EU (less than 2% of SAF in the EU, according to EASA (2025)), owing to a lack of commercial production in the EU or elsewhere. Notably, the majority of the SAF feedstocks used in 2024 were imported (69%), predominantly from China (38%) and Malaysia (12%) (Idem). A reliance on non-EU feedstocks represents a risk if SAF production in those countries accelerates, as feedstock exports would likely decline in this scenario and leave EU SAF production to find alternative sources of feedstock.

Analysis by IATA (2025) finds that by 2030, only 10% of Europe's 1.3 billion tonnes of feedstock would be available for SAF production, and by 2050 this could increase to 12% of 1.4 billion tonnes.

SAF produced from biological sources is reliant on the availability of sustainable biomass, often waste and residual products such as cooking oil, agricultural residue, or municipal solid waste. Because of the finite nature of these resources and the fact that they are waste/residue rather than specifically produced for SAF, the scaling up of biofuels faces constraints. Feedstocks such as oil-based cover crops (i.e. crops grown between traditional food crop rotations to protect the soil) could be grown and used for SAF production; certain cover crops like carinata are classified by ICAO as a SAF feedstock with similar greenhouse gas emissions as biomass waste and residues (BP, 2024), but not classified as a feedstock for advanced biofuels under EU regulations[28]. Expanding the feedstock eligibility would reduce the risk of feedstock shortages in the future (Idem), although it may reduce the environmental effectiveness of the EU ETS if additional feedstocks are less environmentally beneficial, and this trade-off should be recognised.

e-SAF production does not face the same feedstock supply concerns, as the use of renewable energy and carbon capture is not reliant on biomass waste and residue products (Project SkyPower, 2024). However, while less scarce than biomass waste, e-SAF remains constrained by the amount of renewable energy available as well as carbon capture capacity, both of which are required to facilitate e-SAF production. With growing energy demands from many industrial sectors and data centres used for AI systems, as well as ongoing electrification of road transport vehicles, the competition for access to renewable energy will tighten and it will remain crucial for decarbonising aviation that SAF producers have sufficient access to renewable energy at affordable prices.

[28] The list of feedstocks classified for advanced biofuels is presented in Annex IX of the Renewable Energy Directive (Directive (EU) 2018/2001).

b. SAF production capacity in Europe

Aviation fuel represents around 9% of production of fuels in Europe, according to FuelsEurope[29]. The production of SAF by fuel producers is not a standalone product, but rather demand for the byproducts[30] is supporting the economic viability of producing SAF for fuel suppliers. This is true for SAF from biological sources as well as synthetic aviation fuel (or e-SAF); in the latter case the Fischer-Tropsch process commonly used in producing synthetic fuel yields a 55% output of SAF[31]. Therefore, the economic viability of SAF production is also dependent on the markets for byproducts; SAF as a standalone output is challenging to reach economic viability due to high production costs according to FuelsEurope.

In terms of production of SAF, in 2024 the EU produced 192,700 tonnes of SAF (EASA, 2025), compared to a global production of 1 million tonnes (IATA, 2024) (i.e. around 19% of global SAF production). Total global SAF production represented 0.3% of global jet fuel production in 2024 (Idem). EASA analysis indicates that current SAF production capacity in the EU (as of 2024) was approximately 1 million tonnes of SAF per year, the vast majority of which is from refined vegetable and waste oils (Hydrotreated Esters and Fatty Acids, or HEFA). This is sufficient to meet the 2% mandate in place between 2025 and 2029. By 2030, accounting for the facilities currently under construction, SAF production capacity could reach 3.5 million tonnes per year (all biofuels). However, no synthetic aviation fuel production facility is anticipated to be constructed by 2030 (Idem). EASA analysis projects that the capacity by 2030 would be sufficient to meet the 2030 SAF blending target of 6% (estimated to be 2.8 million tonnes of SAF per year); however, the target of 20% SAF blending by 2035 is much more challenging and the production of e-SAF remains essential to comply with the sub-mandate of synthetic fuel production (Idem).

The EU imported around 40% of the SAF supplied in the Union in 2024, which indicates that while domestic production is positive there remains an important role for imports of SAF to play in the fuel mix (EASA, 2025).

The challenge in increasing domestic production capacity is partly on access to feedstocks (as noted above), but also on the capital requirements. EASA estimates that each production facility costs approximately EUR 1.8 billion to construct and between 500-800 facilities will be needed globally by 2050 (Idem). Globally, this would require a total of between EUR 900 billion and EUR 1.4 trillion in capital expenditure into SAF facilities between now and 2050, of which the EU's share would likely represent a significant capital expenditure requirement.

IATA[32] considers that it is essential to deploy EU public funding into SAF production facilities as a means of de-risking private investment, laying the path for the EU to lead global SAF production. More broadly, the use of de-risking policy instruments such as contracts for difference[33] and double-sided auctions[34] have potential to de-risk investments into SAF facilities by providing greater certainty over revenues, but need to be developed further with support from the industry.

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29 Information shared in an interview for this study.

30 The byproducts produced depend on the production pathway but can include propane (sold as LPG), naphtha (blended with gasoline or used as a chemical feedstock for plastic and solvents), renewable diesel, industrial solvents, CO2 (used in power to liquid systems or in food and synthetic chemicals), and biochar (used in soils or construction materials) (US Energy Information Administration, 2024).

31 Information shared by FuelsEurope in an interview for this study.

32 Information collected via interview for this study.

33 Contracts for difference are agreements on a fixed reference price, with increases in the actual price covered by the seller and decreases in the actual price cover by the buyer. It mitigates risks for buyers and sellers and guarantees revenue.

34 Double-sided auctions use a market intermediary to connect fuel producers and buyers, by offering long-term contracts (e.g. 10-15 years) with producers of fuels on one side, and by concluding short-term contracts (e.g. 1-3 years) with buyers of SAF for the offtake of these

Part of the risk involved is that the future price of SAF is uncertain, and investors are hesitant to be first movers (Project SkyPower, 2024). The ReFuelEU Aviation mandate does not include any provision to guarantee a minimum price for SAF nor the option to pay a defined price without producing SAF to meet its obligations, leaving the revenue risk with fuel suppliers making the investment decisions. This compares to the United Kingdom's SAF mandate which operates broadly similar to the ReFuelEU Aviation mandate, but includes a revenue certainty mechanism which derisks investments for fuel producers and in doing so could lower the cost of capital for SAF production facilities, helping to reach a Final Investment Decision (FID) by improving the risk-reward balance for investment. The downside of a revenue certainty mechanism is that, depending on the design of the mechanism, it may be possible to split up the transaction into multiple parts below the reserve price (at which point the top-up would apply), and continue to sell at a higher price than the reserve price set. Other revenue certainty mechanisms such as those proposed in the eSAF Early Movers Coalition could be studied more closely to understand whether they could also apply to biofuels.

Globally, there are no large-scale production facilities for e-SAF as of 2025. The only identified FID on commercial e-SAF production is Infinium's Project Roadrunner in the USA, which reached a FID in May 2025 and will produce 23,000 tonnes of eSAF per year when operational. China has announced production plans that correspond to 20% of announced global capacity, but no FIDs have been reached. Transport & Environment (n.d.) indicate that the biggest barrier to reaching a FID is the high financing costs of around EUR 1-2 billion in capital per plant, and insufficient EU funding does not support the high level of investment required.

Some innovative policy instrument designs have already been announced by the Commission. As part of the Sustainable Transport Investment Plan, the Commission launched the eSAF Early Movers Coalition in late 2025 to boost market-based incentives for the production and use of e-SAF. Eight Member States[35] have already announced their participation in the coalition, committing at least EUR 500 million into large-scale projects to support the rapid deployment of e-SAF in the EU. The coalition will work through the use of 'double-sided' auctions, which functions as a market intermediary between producers and buyers of e-SAF to offer producers greater long-term revenue certainty on prices and volumes received for e-SAF, and provide buyers with competitive short-term contracts for supply.

c. Aerospace manufacturing capability for civil-military purposes

A strong European aerospace manufacturing industry is important for several reasons, including its contribution to the EU economy and role in supporting the green transition of the aviation sector. Additionally, the ability to produce an aircraft solely relying on European manufacturing capacity is a significant enabler of strategic autonomy, reducing the dependency on other global regions in order to produce aircraft.

According to ASD Europe[36], at present the capability to build a full wide-body aircraft exclusively within the EU27's supply chain does not exist, although including firms in other European countries (such as Rolls-Royce in the UK, which produces wide-body engines) is sufficient to produce a fully 'Pan-European' aircraft.

While this is technically possible, in practice many commercial aircraft are reliant on an international supply chain, with components built in Europe being used on aircraft assembled in North America and

fuels on the other side. They provide promoters with the revenue certainty needed to secure financing for the construction of new production facilities, while taking on the financial risks of refinancing through a series of shorter-term offtake contracts. (COM(2025) 664, pp.11-12.

35 Austria, Finland, France, Germany, Luxembourg, Netherlands, Portugal, Spain.

36 Information collected via interview for this study.

vice versa. Chinese aircraft produced by COMAC (its state-owned aerospace manufacturer) also rely on components from overseas, notably for its engines (Reuters, 2025). Almost all commercial jet engines globally are produced by four Western companies: two American companies (GE Aerospace, Pratt & Whitney), one British company (Rolls-Royce; with a presence in EU Member States including a major engine production facility near Berlin), and one French company (Safran; via a joint venture with US company GE Aerospace). China is developing its own engine manufacturing capabilities via its state-owned Aero Engine Corporation of China, with the intention of reducing its reliance on Western engine technology. Little information is available publicly, although it is anticipated to enter service from 2030 at the earliest (Aviation Week, 2018).

Strategic autonomy in aerospace is particularly relevant for military aerospace production, given the inherent links with national security and defence. The ability to fully produce military aerospace systems within the EU would reduce the reliance on international partnerships and future-proof the ability of European aerospace industry to produce its own defence technologies.

According to Rolls-Royce[37], the civil and military aerospace sectors should not be viewed as separate industries, with many interlinkages existing between the two sectors. For example, innovative technologies developed with military first-uses can be transferred to the civil aerospace sector to improve its competitiveness; similarly, the economies of scale afforded by civil aerospace production can support the affordability and resilience of military aerospace. Fostering a strong civil-military aerospace industry would create synergetic benefits for the competitiveness of the European aerospace industry on the global stage and support its strategic autonomy.

However, Europe often trails in military aerospace funding in comparison to the USA where aerospace is heavily publicly funded (see 3.3.3). According to Rolls-Royce[38] which has experience of seeking funding in the USA for military aerospace contracts, a lucrative publicly funded industry means that the market is very crowded with competition for funding to develop new technologies and innovate. Rolls-Royce further stated that the US model of funding defence purposes first and then reaping civil aerospace economic benefits from spillover technologies and innovations is a successful model with a joined-up approach recognising the importance of both civil and military aerospace.

The public funding available in the EU includes the new European Defence Fund and European Competitiveness Fund, but the absence of an industrial strategy for aerospace that recognises its position as a strategic sector of the economy contributing to the EU's competitiveness and strategic autonomy in defence capabilities is a disadvantage. The existence of a European Defence Industrial Strategy (JOIN(2024) 10) does not sufficiently focus on aerospace (the word 'aerospace' appears once in the 32-page communication). On the civil aerospace side, ASD Europe (2025) has set out its detailed proposal for a possible future industrial strategy.

The aerospace sector in Europe also faces higher energy costs compared to the USA and China, as shown in more detail in 5.2.4.b. Aerospace is an energy-intensive sector, as are industries supplying the aerospace sector with inputs such as chemicals and steel. Suppliers seeking to remain competitive in a global market will take into account energy prices and may move to regions with more favourable conditions to be competitive.

d. Access to raw materials and critical resources

The EU aerospace industry is highly dependent on imported raw materials. For example, China is a world leader in the supply of many rare earth elements used in the aerospace sector, processing around

[37] Information collected via interview for this study.

[38] Information collected via interview for this study.

90% of global rare earth metals and 90% of global magnet manufacturing (ASD Europe, 2025). However, it has recently tightened export restrictions on products containing Chinese-sourced rare earth elements used in the aerospace industry (European Parliament, 2025). The restrictions highlight the need to avoid single-point dependencies for critical raw materials in order to support the resilience of the European aerospace sector in the long-term.

There are similar concerns for rare earth elements used in magnet-based actuators and semiconductors, with over 98% of rare earth magnet supply coming from China (European Parliament, 2025). Additionally, carbon fibre and high-performance resins essential for composite structures are primarily sourced from Asia and the US. In response, the EU is funding supply chain resilience and recycling programmes, and has included aerospace-relevant materials in its Strategic Raw Materials List.

While the Critical Raw Materials Act is a positive development for the aerospace sector, ASD Europe (2025) suggests that more could be done, notably, recognising aerospace and defence sectors as priority sectors for resource access, expanding agreements with like-minded global partners, and establishing strategic stockpiles for aerospace safety-critical materials to boost resilience of the sector.

e. Air navigation services technology

In the ANS industry, increasing digitalisation is supporting the improvement of services in becoming more efficient and harmonised across Europe. The introduction of 'trajectory-based operations' (TBO) as a concept is a crucial upcoming innovation of air traffic management, allowing for improved predictability, capacity, and environmental performance (EUROCONTROL, 2024). TBO works through the use of satellite navigation and significantly improved data sharing between the aircraft and ground systems. Restrictive ground-based navigation systems currently used, such as waypoints and beacons, would no longer be used as the core means of navigation because satellites are much more accurate at tracking the location of aircraft. Greater accuracy means that aircraft can fly more efficient routes, as controllers have improved certainty on the location of aircraft. TBO is estimated to double average capacity in airspace sectors compared to current technology.

The introduction of TBO requires all ANSPs to have technology systems capable of handling these operations and communicating with each other ANSP's systems. The deployment of the technology is being supported by the Single European Sky ATM Research (SESAR) Deployment Manager across the SES; the European ATM Master Plan aims to make TBO an operational reality by 2040 in Europe.

f. New aircraft propulsion technologies

New technologies such as electric and hydrogen propulsion offer significant environmental benefits over current aircraft technologies and, unlike SAF which produces both CO_2 and non-CO_2 emissions at the point of combustion, electric and hydrogen aircraft would have zero tailpipe emissions. Europe's aerospace sector is well-positioned to develop such technologies given its strong aerospace sector and the environmental policies in place in the EU to stimulate their development.

Significant progress to reach Net-Zero goals has been made through the *Clean Aviation Joint Undertaking* (CAJU), launched under Horizon Europe. As of 2023, CAJU had funded 28 projects involving over 300 entities, with EUR 806 million in EU contributions (Clean Aviation JU, 2024). Projects cover hydrogen combustion, fuel-cell propulsion, and hybrid-electric regional aircraft. Airbus's ZEROe programme, supported in part through national innovation schemes (e.g. France's Civil Aviation Research Council (CORAC) and Germany's LuFo), has selected hydrogen fuel-cell systems as the baseline for its prototype development (Airbus, 2023). According to the *Destination 2050* roadmap (coordinated by A4E, ASD, CANSO, ERA, and ACI Europe), these technologies are central to reaching net-zero emissions by 2050. The European Commission has also launched the *Alliance for Zero-Emission Aviation* in 2022 to coordinate stakeholders and accelerate industrial readiness.

Aerospace is one of the most R&D intensive manufacturing sectors in the EU. Airbus, for example, invested EUR 3.3 billion in R&D in 2023, equivalent to 5.6% of its revenues (Airbus, 2024). Across the EU, combined public and private R&D investments in civil aerospace exceeded EUR 8 billion in 2022 (Clean Aviation JU, 2023). This includes funding from Horizon Europe, national schemes (e.g., Germany's LuFo VI and France's France Relance), and public–private partnerships such as SESAR 3 JU (Joint Undertaking) and the Clean Aviation JU.

Intellectual Property (IP) protection is central to protecting the EU's competitiveness in aerospace through its innovations. Most leading firms rely on patents, particularly in propulsion systems, flight control algorithms, and avionics design. The Clean Aviation JU mandates robust IP management frameworks for consortia, aligned with Horizon Europe rules. While the new Unitary Patent system aims to simplify protections, the EU still faces challenges related to IP enforcement, especially vis-à-vis third-country competitors. The European Commission's *IP Action Plan for SMEs* (COM(2020)760) encourages dual-use technology developers to apply early protection mechanisms to avoid industrial espionage and unfair competition.

i. Battery-powered electric aircraft

The electrification of aviation represents a significant transformation for short distance flights, driven by the need to reduce emissions and improve sustainability. The electric aircraft market is mainly divided into two segments: eVTOL (electric Vertical Take-Off and Landing) and eCTOL (electric Conventional Take-Off and Landing). eVTOLs are designed for urban mobility, with vertical take-off capability that makes them ideal for urban area applications such as air taxi services, light cargo transport, and emergency missions. eCTOLs target short-haul and regional routes, featuring configurations similar to traditional aircraft but powered by batteries. Among the leading eVTOL manufacturers are Joby Aviation and EHang, while in the eCTOL segment Heart Aerospace stands out.

Given the characteristics of these aircraft, both in terms of range and passenger capacity, electric aircraft will be used for regional connections (short distance of up to 200 km). Consequently, the introduction of these aircraft can stimulate regional mobility, making areas that are now difficult to reach easier to access and promoting economic growth and the creation of new jobs. The expected timeline for the introduction of the first electric aircraft is short. It is estimated that, starting from 2030, the first electric aircraft will enter into service for both commercial aviation (Aviation Benefits Beyond Borders, n.d.). In particular, some operators (such as Air Canada and SAS) have already ordered several aircraft from Heart Aerospace.

ii. Hydrogen-powered Aircraft

Reducing emissions from air transport requires not only the adoption of SAF, but also significant advances in aircraft technology, including the development of zero-emission models such as hydrogen-powered planes. Leading manufacturers, such as Airbus, are actively developing hydrogen-based solutions for medium- and long-haul operations, while innovative startups like ZeroAvia are also contributing to progress in this field.

Hydrogen-powered aircraft technology is making progress, aiming to use electric propeller systems driven by hydrogen fuel cells or by hydrogen combustion in specially modified gas turbine engines. With fuel cells, hydrogen generates electricity through a chemical reaction; with turbines, hydrogen is burned directly and both methods produce only water as a byproduct (although hydrogen combustion does produce harmful non-CO_2 emissions such as NO_x). However, liquid hydrogen has a lower energy density per unit volume than conventional jet fuel (Jet A1), while gaseous hydrogen is even less dense, so hydrogen aircraft will need an increased onboard fuel storage volume to achieve comparable flight ranges. Additional issues related to H_2 technologies include maintaining cryogenic storage for liquid hydrogen at -253 °C and establishing dedicated airport infrastructure and supply chains to support these operations.

Initial deployment is anticipated for commuter, regional, short-range, and medium-range routes, where battery weight remains a limiting factor for electric aircraft. The incorporation of hydrogen as a fuel source for larger passenger aircraft would require substantial modifications to existing design frameworks to accommodate the necessary hydrogen volume; such advancements are considered feasible in the longer term.

iii. Roll-out of new propulsion technology aircraft

According to the baseline scenario developed by the Alliance for Zero Emission Aviation the number of electric and hydrogen-powered aircraft in Europe by 2050 will be around 5,000. However, to achieve these objectives, airports will need to be equipped with fast charging stations or battery swapping systems, integrating these solutions into existing stands and new hangars. In addition, airport power grids will need to be reinforced and, where possible, the local production of renewable energy should be considered. Finally, staff training for managing new technologies will be crucial, as will the revision of operational and safety procedures.

However, according to an ICAO (2022) report on the feasibility of hydrogen in aviation, the technology is unlikely to contribute significantly to decarbonisation by 2050, as it is forecast to account for only a 1.9% share of aviation energy demand. The technology is only likely to develop further in the 2050s and 2060s, if it is technically feasible and commercially viable (Idem). As a result, there is no immediate requirement to deploy hydrogen infrastructure for aviation as the technology is many years away from being a commercial reality.

g. Artificial intelligence (AI)

The development of artificial intelligence (AI) systems is rapidly influencing many economic sectors, with aviation no exception. The European Union Aviation Safety Agency (EASA) has conducted research into the possible use cases for AI in aviation, which are:

- **Flight operations:** assisting flight crew on routine tasks to improve operational efficiency of flights (such as predicting turbulence and icing conditions);
- **Predictive maintenance:** AI can be used to proactively estimate when maintenance may be required to improve maintenance schedules and reduce the likelihood of failures;
- **Improved environmental performance:** such as the use of AI to identify optimal flight trajectories when conducting flight planning that minimise carbon emissions;
- **Improved air traffic management:** improved trajectories, reduced flight times, fuel consumption, and costs for airspace users which could ultimately reduce delays and increase airspace capacity;
- **Airport operations:** improved detection of foreign object debris on the runway and detection of birds and unmanned drones in the surrounding area of the airport;
- **Improved cybersecurity;** and
- **Improved safety management systems**: such as through assisting with detecting and categorising risks and their prioritisation.

A substantial impact of AI is through supporting the development of urban air mobility and advanced air mobility solutions, which broadly refer to the use of unmanned aircraft to move people and goods within urban areas and between regions. "U-space", which refers to the shared use of airspace between manned and unmanned aircraft and the set of solutions used to manage the unmanned air traffic. AI would be used for detecting obstacles, allowing for changes in trajectories, and assessing risks on the ground when landing.

It is not apparent whether the existing regulatory acquis for aviation takes sufficient account of the possibility of using AI solutions in the aviation sector, in particular regulating their safe and effective use. EASA's Artificial Intelligence Roadmap 2.0 notes that in order to comply with the EU AI Act, future implementing and delegate acts on airworthiness, air traffic management, and unmanned aircraft will be required such that the use of AI can be safely and effectively integrated into the EU aviation sector.

5.2.4. Economic

a. Market structural impacts

The international and EU rules governing aviation are briefly set out in Section 5.2.1 and Section 5.2.2 above. As stated, international aviation relations are based on national sovereignty, with the EU regulatory acquis effectively allowing the EU to act as a single jurisdiction in aviation to a significant extent. The consequence is that international aviation (not including intra-EU) is governed by bilateral agreements, which mostly require majority ownership of airlines by governments or citizens of each jurisdiction in order to have traffic rights to fly between jurisdictions. The implication is that international mergers between airlines are not generally possible in the way that is normal in other industries, because traffic rights would be lost.

The system of airline alliances has arisen as a response to this situation. Airlines within the three global alliances (STAR, SkyTeam and Oneworld) cooperate with each other to the extent permitted under competition rules, which includes use of code-shares[39] on each others' flights and cross-selling of connecting journeys. In some cases airlines have formed joint ventures which go further, allowing coordination of schedules and pricing, but this is subject to oversight by, and concessions to, competition authorities. The three global alliances provide economies of density and economic benefits to their members (IATA, 2011) and can be regarded as proxies for the mergers between entities which are common in other industries.

The other main economic model for airlines, the Low-Cost Carrier (LCC), tends to have arisen in markets less constrained by airline ownership rules, particularly domestic and regional markets such as within the EU and its neighbouring countries. As noted in 3.4.1, the EU has the highest LCC capacity share among the comparator third countries reviewed.

The combination of LCCs and Full-Service Carriers (FSCs) in airline alliances have contributed to Europe having strong air connectivity compared to other regions, as shown in 3.4.1 above. However, while the European airline industry is strong, it is subject to a range of competitive pressures., as set out in 5.2.2 above.

As noted in 2.4.2, airports generally do not compete with each other for direct traffic as they serve different localities, except to the extent that they act as substitutes where they serve the same city or similar leisure-related destinations. However, hub airports do compete for connecting traffic, both within the EU and internationally. EU hubs generally achieve a high level of hub connectivity, but they

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[39] An agreement between airlines to market flights and sell seats under their respective airline designators, while it is operated by only one of the airlines.

are subject to potential competitive disadvantages from higher fuel costs resulting from the EU's environmental policies, as described in 5.2.2.b.

In the aerospace sector, the presence of several of the world's largest leading firms is a key strength for the EU, given that the aerospace industry is characterised by a top-heavy structure with a small number of large firms benefiting from economies of scale, supported by an extensive supply chain of smaller firms (see 2.4.3). The structure is similar in the USA owing to a number of large aerospace firms benefiting from defence contracting, while China is also aiming to develop its own aircraft manufacturing company to rival Airbus and Boeing.

The ANS industry market structure is monopolistic within each country, given that each country controls its own airspace as its sovereign territory and the nature of air navigation services does not fit with multiple service providers controlling the same airspace. This is consistent across the comparator third countries analysed and there is no competition as a result between the EU and third country ANSPs.

The ground handling industry structure in the EU is set by the regulations specifying a minimum of two providers at each airport handling above 2 million passengers or 50,000 tonnes of freight, as set out in the Groundhandling Directive. The level of competition varies based on how many competitors Member States choose to allow.

The aviation fuel industry in the EU is concentrated to few suppliers per airport, while the SAF fuel supply market is highly concentrated (see 2.4.6). While this is supportive of achieving economies of scale in production which is a limiting factor in SAF prices (and therefore a positive feature for competitiveness), the limited number of suppliers does not grant air carriers much choice at airports over the fuel uplifted and its price, particularly for carriers that do not have their own self-supply arrangements (2.4.6).

The impact of labour costs is covered for each industry in Chapter 4.

b. Energy prices

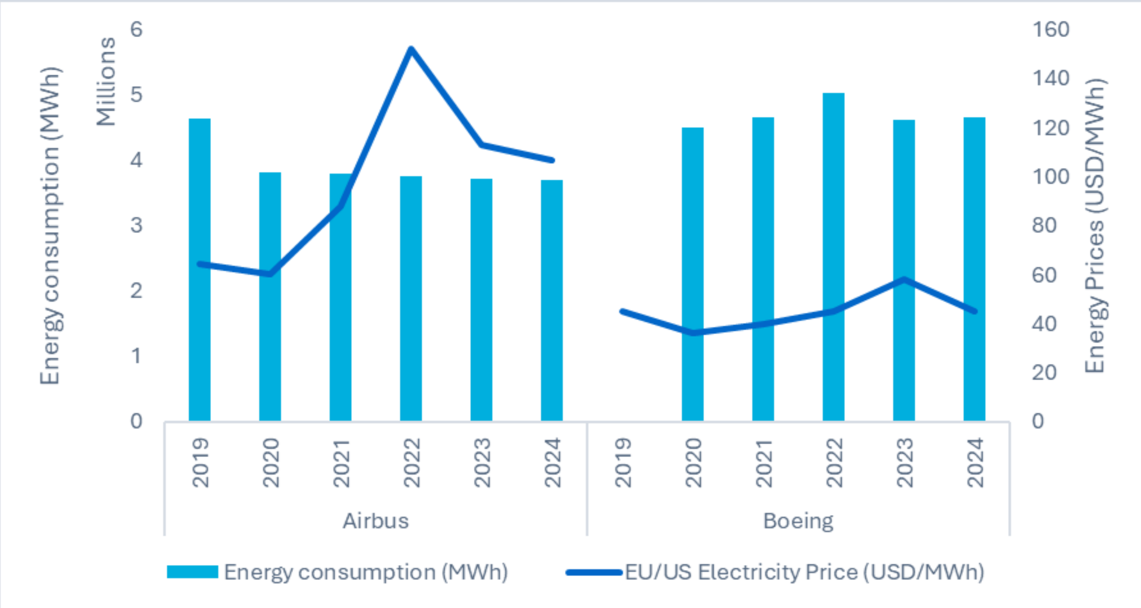
The EU faces higher energy prices for industrial users on average compared to third-country competitors, a problem that has been exacerbated by the energy price rises observed in Europe since 2022. Data from the International Energy Agency found that energy prices in the EU for large industrial customers in energy-intensive industries in 2024 was approximately twice as high as the equivalent costs for energy in China and India, and more than double the cost of energy in the USA. In comparison, in 2019 the EU average energy price for energy-intensive industries was comparable to China and India and around 20% higher than the USA.

The high energy costs place the EU at a cost disadvantage versus third country comparators, in particular for the energy-intensive processes involved in the production of e-SAF and aerospace supply chains. ASD Europe, a trade association for the aerospace industry in Europe, noted in 2024 that lower energy costs are a key component of maintaining Europe's competitive industrial base in aerospace.

Airbus (2025 ESG, 2021) and Boeing (2025 Boeing, 2021 Boeing, 2020 Boeing) have reported broadly similar energy consumption levels in recent years, as shown in

Figure 5.4. However, since the pandemic, energy prices in the EU have risen sharply (IEA, 2025), underscoring the additional cost pressures faced by Airbus and other European manufacturers compared with their US counterparts.

Figure 5.4: Airbus and Boeing energy consumption and regional electricity prices



Source: Steer analysis of Airbus, Boeing, IEA data.

5.2.5. Financial

a. Profitability of the aviation sector

As shown in 3.5.2, while the EU air carriers analysed are moderately profitable, they face competition from comparator third country airlines such as Turkish Airlines, Emirates, and Qatar Airways which all report significantly higher profitability (EBIT margins of over 15%). This represents a challenge to EU airlines' competitiveness versus these carriers; higher profitability indicates not only that these non-EU carriers are more efficient in their activities, but also that they can better absorb cost increases or fare reductions and remain competitive in the medium-term.

On the other hand, as shown in 3.5.2 EU airport groups report higher levels of profitability than their non-EU counterparts, which is likely to reflect higher levels of privatisation in the EU airport sector compared with third country comparators (see Table B.1) and a corresponding focus on profitability to generate returns for investors. Higher profitability for airports does not influence their competitiveness *per se*, given that airports do not often compete with one another (see 2.4.2).

As shown in 3.5.2, EU aerospace firms report similar levels of profitability with non-EU counterparts, indicating a comparable level of operational efficiency and economies of scale, even despite higher energy costs faced by EU aerospace industry compared to competitors in the USA and China (b).

As shown in 3.5.2, EU ANSPs are on average less profitable than non-EU counterparts, which is likely to reflect the regulatory environment they operate in (see Table B.1) which sets cost-efficiency improvement targets each year to reduce costs to airspace users (which is ultimately contributing to a more affordable and competitive EU aviation sector).

Insufficient data was available for ground handling companies and aviation fuel suppliers.

b. Constraints on access to capital

Credit ratings are used by lenders to determine the level of risk of borrowers and lower risk premiums are associated with higher credit ratings (S&P Global, n.d.). As shown in Figure 3.16, on average EU carriers have a similar credit rating to non-EU air carriers, although the range of ratings for carriers in the middle two quartiles of carriers reviewed is narrower for EU carriers (BBB to BB+) than for non-EU carriers (BBB+ to BB). However, despite similar credit ratings the average cost of capital for the air transport industry is higher in Europe than in competitor regions such as the USA and China (Figure 3.15), which indicates that EU air carriers face higher financing costs than non-EU carriers, reflecting EU capital market conditions.

EU carriers are required to be at least 51% owned and controlled by EU parties; the maximum investment from non-EU parties is 49%. As shown in Table B.1, this is comparable to similar restrictions in Canada and Türkiye but is less restrictive than the USA and China (75% national ownership required). This presents a limit in the extent to which EU carriers can access foreign investment to support growth. The European Commission indicated in its 2015 Aviation Strategy that it sought to increase the ability of EU carriers to access foreign investment by evaluating the ownership and control restrictions. This is currently being investigated through the Air Services Regulation revision, as described in the open public consultation. While opening up investment opportunities would allow greater access to global finance, concerns exist over the impact on traffic rights for third countries as, under the current Regulation, an air carrier that is no longer majority owned by EU nationals would no longer be entitled to an operating licence and thus would lose access to the intra-EU market This question is being assessed in the upcoming revision of the Air Services Regulation.

5.3. Future scenarios

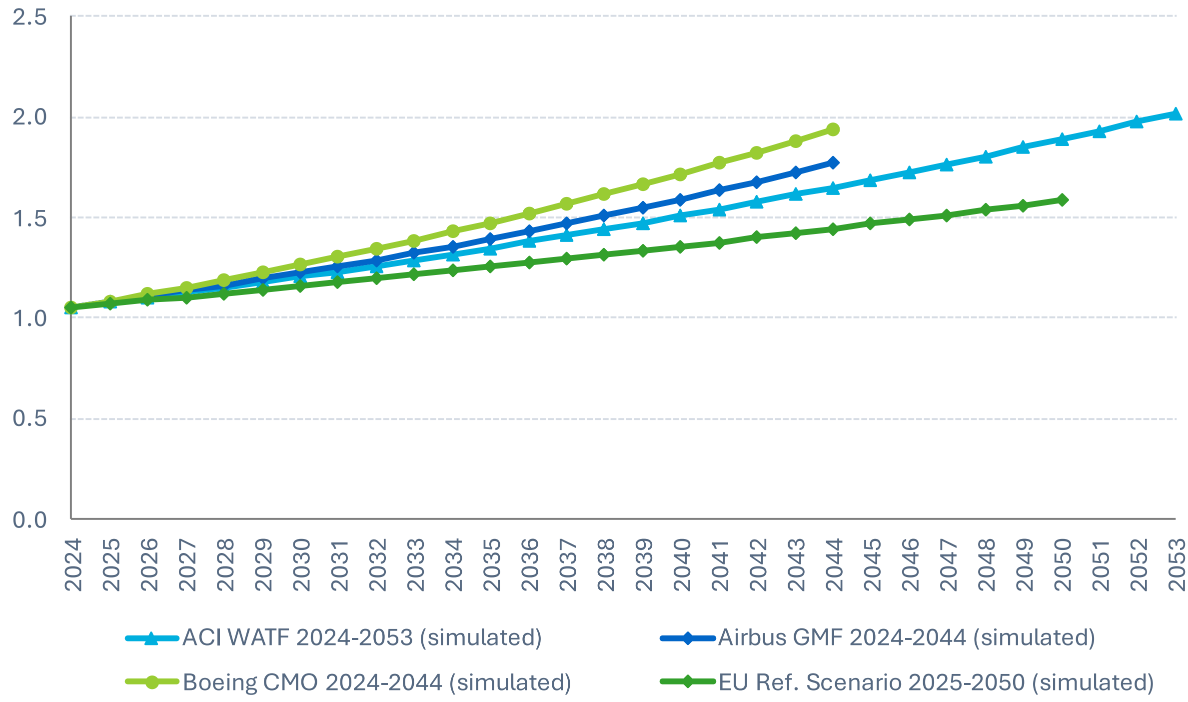
This section analyses possible future scenarios and their potential implications for the sector's competitiveness. The scenarios considered address the following aspects:

- The future growth rate forecast for the EU and comparator third country aviation markets, based on a range of publicly available forecasts;
- Potential risks to those forecasts, considering future impacts of decarbonisation policies, capacity and readiness for growth and geopolitical developments.

5.3.1. Forecast growth in aviation

As shown in Figure 2.3, there were 1.053 billion passenger trips in the EU in 2024, comprising 151 million domestic passengers, 383 million intra-EU passengers, and 519 million extra-EU passengers (Eurostat, 2025). Growth forecasts are taken from ACI (Airports Council International), Airbus, Boeing, and the EU's Reference Scenario (2020) to simulate projected growth in passenger demand. These projections are shown in Figure 5.5 below, applying the projected growth to the base 2024 traffic. The EU Reference Scenario forecasts are based on intra-EU passengers only, and hence produce lower forecasts than the other projections, which also account for extra-EU passengers, which are expected to grow more strongly than intra-EU passengers.

Figure 5.5: EU total passenger demand forecasts, 2024-2053 (billions)



Source: Steer analysis, ACI World Airport Traffic Forecasts 2024-2053, Airbus Global Market Forecast 2024-2044, Boeing Commercial Market Outlook 2024-2044; EU Reference Scenario 2020 applied to Eurostat base year data for 2024. Notes: ACI data is based on growth rates for "European Union + UK" market, as the EU was not separately forecast. The Boeing CMO forecast is based on RPKs (Revenue Passenger Kilometres), not passengers. Hence, these forecasts may be greater than the equivalent passenger forecasts, if average route distance is also forecast to increase.

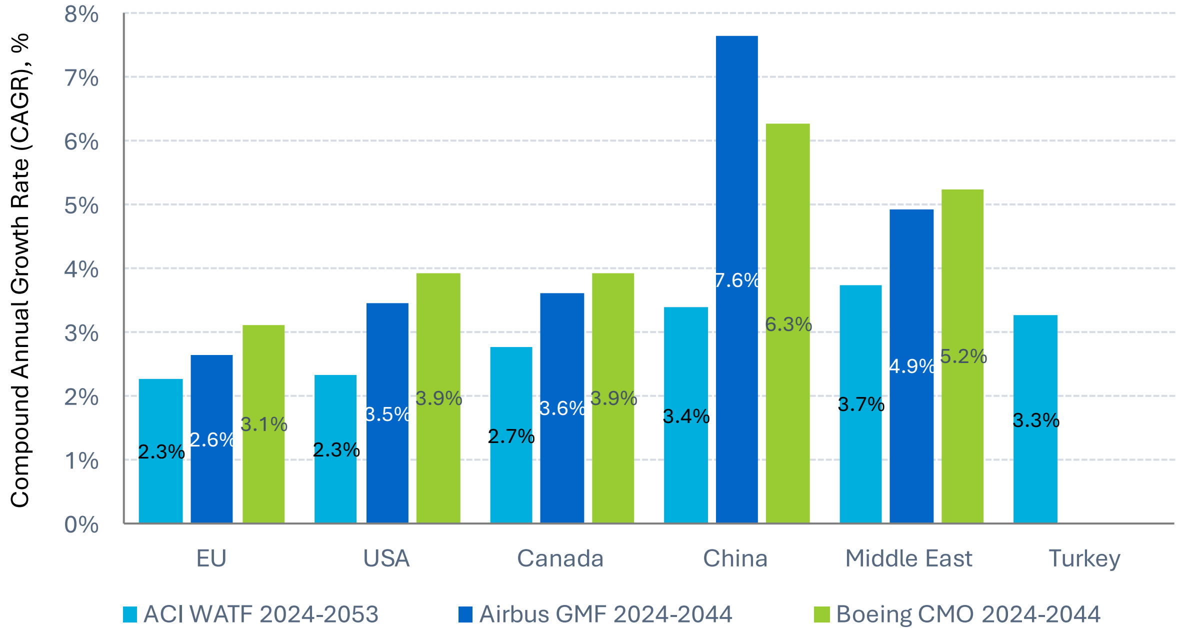
The Boeing forecasts for EU passenger traffic are the most optimistic, with a forecast Compound Annual Growth Rate (CAGR)[40] of 3.1% p.a. up to 2044. The Airbus and ACI forecasts are less optimistic with CAGRs of 2.6% p.a. and 2.3% p.a. respectively[41], while the EU Reference Scenario, which as noted only relates to intra-EU traffic, has a significantly lower CAGR of 1.6% p.a.

Figure 5.6 compares the EU passenger growth forecasts above with passenger forecasts for the third country comparators in this study in terms of the average Compound Annual Growth Rates (CAGRs). EU Reference Scenario figures are not included, as they are only available for the EU.

[40] Compound annual growth rates calculate the average annual growth rate over a period of multiple years.

[41] The ACI forecasts extend further into the future (up to 2053 rather than 2044) and hence their CAGR may be lower than for Airbus and Boeing, if growth is expected to slow down in later years of the ACI forecast.

Figure 5.6: CAGR of passenger projections, total passenger demand, EU + comparator third countries



Source: Steer analysis, ACI World Airport Traffic Forecasts 2024-2053, Airbus Global Market Forecast 2024-2044, Boeing Commercial Market Outlook 2024-2044. Note: Airbus and Boeing forecasts are not available for Türkiye. "North America" used as the region for both the US and Canada from the Boeing CMO projections. Airbus and Boeing CAGRs are unweighted averages by region.

The passenger projections for the EU are the lowest of all the markets in the chart above, regardless of source, although the ACI projections for the EU and the USA are similar, at a CAGR of 2.3% p.a. The growth rates for China and the Middle East are significantly higher under all the forecasts. According to the ACI forecasts, the share of EU+UK passengers of total passengers globally is forecast to decline by -3.5 percentage points, from 19.3% of total passengers in 2025 to 15.8% of passengers in 2053. This highlights the magnitude of the challenge facing the EU aviation sector in maintaining and improving its competitiveness in the medium-to long-term future in order to preserve its global market share.

In addition, ACI forecasts that the number of aircraft movements in the EU (i.e. take-offs and landings) will increase by 38.5%, from 19.3 million movements in 2025 to 26.7 million movements in 2053. These figures are comparable to EUROCONTROL forecasts of 44% increase in the number of flights in its network between 2019 and 2050.

Airbus and Boeing also produce forecasts of the world's aircraft fleets. Airbus predicts growth of 105% between 2024 and 2044 worldwide (with 62% growth in Europe, 34% in the US and 168% in China). Boeing forecasts 83% worldwide fleet growth (with 59% in Europe, 30% in US and 120% in China).

Given the range of different forecasts for each region, and in particular for the EU (or wider Europe), and taking account of the fact that Airbus, Boeing are commercial organisations benefiting from higher traffic, as do ACI's member airport operators, it is likely that there are potential risks to these forecasts in that downsides (such as slower economic growth or geopolitical impacts on air transport demand) may not have been given sufficient weight (also noting that the non-commercial forecast from the EU Reference Scenario is significantly lower, consistent with this concern). These aspects are discussed in the sections below.

5.3.2. Future impacts of decarbonisation policies

a. EU ETS

The EU ETS cap (i.e. the total CO_2 emission allowances) will reduce by -4.3% per year until 2027; from 2028 onwards the cap will reduce by -4.4% per year. The cap in 2024 stood at 28.9 million tonnes of CO_2 equivalent emissions (Argus, 2023). The EU ETS will also be reduced with standalone cap reductions of 90 million allowances in 2024 and 27 million allowances in 2026. In the aviation sector, free allocations of allowances are being phased out so that allowances will increasingly need to be purchased at auction (or on the secondary markets), increasing costs for airlines. As shown in Figure 5.1, the nominal cost of compliance with the EU ETS will rapidly increase as a result of the phasing out of free allocations and cap reductions.

Even with the limited free allowances allocated to airlines (described in 5.2.2.b.iv), analysis by IATA finds that the free allowances allocated are insufficient to address the price differential between SAF and conventional jet fuel. SAF free allowances would only cover between 4-7% of annual demand for allowances between 2024-2030, and the 20 million free SAF allowances are outweighed by the removal of 27 million free allowances phased out by 2026.

Overall, the compliance costs for EU ETS will increase in the medium-term; the long-term outlook is less certain given that the anticipated increase in the use of SAF would reduce airlines' need to purchase ETS allowances.

b. ReFuelEU Aviation

As shown in Figure 5.2, the increasing mandate for CO_2 uplift in the ReFuelEU legislation over time will lead to higher amounts of SAF being uplifted departing EU airports. It is unclear whether SAF costs will decline over time, given that the EU mandate is likely to cause demand to outstrip supply, thereby keeping prices high in the future. S&P (2025) estimates that the cost differential between SAF and conventional jet fuel in Europe would in fact rise from 2.22 times the price of conventional jet fuel in 2026 to 3.38 in 2050. The shortfall in production of SAF by 2050 is estimated to reach 15 million tonnes, equivalent to 48% of jet fuel demand in the EU (Idem).

The inclusion of specific SAF allowances in the EU ETS somewhat mitigates the increased cost of SAF, but this is limited in scale and temporary until 2030 (IATA, 2025). Looking longer-term, the overall outlook for SAF prices into the future is not consistent with a competitive EU aviation sector, as previously shown in Figure 5.1.

5.3.3. Capacity and readiness for growth

The EU aviation market is anticipated to grow substantially in the future. However, growth cannot be delivered without capacity in the system: in terms of airport infrastructure, aerospace production, air navigation services, and fuel supplies in line with decarbonisation mandates. The current indication is that current and planned future capacity is not sufficient to support the anticipated growth.

On **airport capacity**, research by IATA indicates that the growth in air traffic in Europe to 2050 is not being met by planned growth in airport infrastructure, estimating a 12% shortfall in airport infrastructure where demand cannot be met by 2050 (IATA, 2024). Globally, 213 airports are highly congested and require slot coordination[42] at present (summer 2025 season), 86 of which (40%) are EU

[42] Slot coordination involves independent slot coordinators allocating landing and take-off slots to airport users (airlines) because the available infrastructure is insufficient to meet airline demand.

airports. According to IATA, global slot coordination due to capacity constraints may increase by 25% globally in the next decade.

Aerospace production capacity will need to ramp up in light of geopolitical developments and a new commitment among NATO member states to commit to spending 5% of GDP on defence (of which aerospace is a part). In a position paper by ASD Europe (2023), this represents a challenge for the industry as concerns over financial commitments required to fund new production capacity, continued access to key raw materials, and access to a growing skilled workforce will also need to be addressed in order to facilitate increased production in the near future. On the civil aerospace side, Airbus is accelerating production to 75 aircraft a month (Airbus, 2025), stated to be the highest rate of production achieved in civil aerospace, in order to account for a large backlog in demand and a near doubling of the aircraft fleet by 2044 (Airbus, 2025).

Air navigation services are impacted by capacity shortages in the present day, owing to a shortage of controllers and needs to upgrade technology (described in 4.5). EUROCONTROL notes in its 2024 Performance Review Report that *en route* air traffic flow management delays reached their highest levels in decades, averaging 2.13 minutes per flight , of which over half (51.8%) was due to ATC capacity and staffing shortages. The indication is that the capacity problem will worsen without action, causing longer delays and inhibiting traffic growth (EUROCONTROL, 2022). Long lead times in the training of new ATCOs as well as limited use of cross-border operations (i.e. assigning ATCOs to work remotely controlling airspace where demand is greater) indicate that there is no quick solution, and a network-level plan to address capacity shortages for the long-term may be beneficial. Without improvements, European ATM will be unable to accommodate the forecast increase in flight volumes by 2050, while also meeting targets for cost-effectiveness and delays (EUROCONTROL, 2025).

On **fuel supply**, FuelsEurope[43] indicated almost all of the required production capacity to meet the 2030 SAF mandates under the ReFuelEU Aviation target levels either has already been constructed, or it has passed the final investment decision (FID) and will be commissioned in the coming years. However, it raised concerns that the production capacity required to comply with the mandated SAF blending percentages from 2035 is a large step from 2030. Given that investment cycles can typically take around 5 years of planning and 5-7 years of construction, having the visibility over 15-20 years for fuel producers deciding whether to make investment decisions is crucial in managing risks.

It also noted that the specific synthetic aviation fuel blending mandate from 2030 onwards will be challenging to provide, given that there is insufficient capacity to produce e-SAF in Europe at present. Analysis from Transport & Environment (n.d.) indicates that the announced plans for e-SAF in Europe account for more than half of the planned production capacity globally by 2030 (2.1 Mt in 2030, and 5.0 Mt in total when all announced projects are considered, accounting for 10% of EU aviation fuel demand). Despite the ambition expressed, of the approximately 40 large-scale projects announced in Europe, only four are in advanced stages and none of these projects have reached a FID; the actual development of production capacity for e-SAF by 2030 is therefore wholly uncertain. Noting the timescales involved in commissioning SAF production facilities above, there is a possibility that no commercial e-SAF production in Europe will be achieved in time for the 2030 mandate on e-SAF blending. Argus (2025) estimates that the penalties for EU fuel suppliers if no e-SAF is supplied in 2030 would reach around $10 billion (~EUR 8.6 billion) if the penalties were to be applied.

[43] Information collected via interview for this study.

5.3.4. Geopolitical developments

a. Possible easing of the Russian airspace restrictions

Restrictions on overflying Russian airspace for EU carriers may ease in the future, although it is highly uncertain if and when this will happen. In the absence of redressive measures for the current situation where Chinese carriers have a competitive advantage on routes due to overflying Russia, the easing of the restrictions on Russian airspace would remove the structural basis of this competitive advantage. Nonetheless, many carriers impacted by the restrictions have reshuffled their route network operations and fleet utilisation (such as Finnair, as described in Steer, 2023). Therefore, the reopening of Russian airspace to EU carriers would require a further reorganisation of route networks and amendments to the use of slots to a different destination.

The EU regulatory framework for slots (Regulation (EEC) 95/93) has limited flexibility to address crises. While the EU introduced in 2022 a regulation for temporary relief from slot utilisation rules requiring 80% utilisation, the issues created by the Russian war of aggression against Ukraine were not directly addressed by the slot utilisation relief. IATA[44] noted that some carriers experienced difficulties in applying a justified non-use of slots, whereby an air carrier is not penalised for not using a slot due to the airspace restrictions introduced in 2022, which have made operating those routes more challenging. While the Commission had intended to address the issue in 2022, it remained at the proposal stage and has not yet been adopted.

Air carriers seeking to recommence operations or increase frequencies on existing routes following the easing of airspace restrictions would need to gain access to slots (or re-use existing slots) with no certainty of accessing them. This presents a risk to the competitiveness of EU carriers on these routes, if and when Russian overflights become possible for EU carriers.

b. Greater protectionism and tariffs

A European Commission communication on the proposal for a European Competitiveness Fund, a cornerstone of the current Commission's policy agenda (European Commission, n.d.), notes the importance of large investments in defence that support the EU's freedom of action, reducing the reliance on economic relations with third countries. This is previously described in the Joint White Paper on European Defence Readiness and the European Economic Security Strategy.

The EU has identified the need to combat the risk of reliance on external partners, and set out policy options that can help to deliver European strategic autonomy. In aviation, this manifests itself particularly in the aerospace sector; the Parliament's research in 2022 noted that the first Trump administration highlighted the high dependence of EU Member States on the USA for their defence under NATO; more recent rhetoric in the second Trump administration has accelerated efforts to improve Europe's strategic autonomy in defence (such as the Security Action for Europe instrument supporting the European defence industry, of which aerospace plays a major part).

On tariffs, the European Commission negotiated a trade deal with the USA that restores a zero-tariff regime on aircraft and component parts, returning to the framework established under the 1979 Civil Aircraft Agreement after a brief 10% tariff was imposed earlier in 2025 (European Commission, 2025). This is a positive development for the EU aerospace sector and mitigates potential impacts in transatlantic aerospace supply chains, but it does not negate the need for ongoing development of EU

[44] Information collected via interview for this study.

strategic autonomy in aerospace. Efforts to develop a fully capable industry in Europe will continue to be needed.

5.4. Conclusions

There is a wide range of factors impacting the competitiveness of the EU's aviation sector. These are discussed under each of the five competitiveness drivers, as well as the future scenarios, below:

Aero-political

- The European single market for aviation has been broadly successful in creating a more efficient market and lowering barriers to entry, stimulating competitiveness within the intra-EU market. Externally, the EU has sought to amend bilateral agreements between Member States and third countries, as well as negotiating EU comprehensive aviation agreements with third countries. Fair competition clauses in those agreements, and Regulation 2019/712, seek to ensure a level playing field between EU and non-EU carriers, although the effectiveness of this tool is unclear.
- EU carriers face longer routes to/from China and the Far East compared to Chinese carriers due to restrictions on operating over Russian airspace that do not apply to Chinese carriers. This places EU carriers at a competitive disadvantage on these routes.

Regulatory

- The EU has a higher level of climate ambition with respect to aviation compared to third country comparators. Two key measures promote emissions reductions, the EU ETS and ReFuelEU Aviation, but lead to higher costs per passenger for EU air carriers, impacting their competitiveness compared to non-EU carriers, which are less exposed to EU decarbonisation policy. The EU ETS (applicable intra-EEA) has a higher level of ambition than CORSIA, the international aviation carbon offsetting system (the average carbon price per tonne of CO_2 emitted for the EU ETS is currently much higher, but this may change once CORSIA becomes mandatory in 2027).
- The ReFuelEU mandate results in additional costs for EU carriers because the cost of SAF is currently around 3 times higher than conventional jet fuel; for synthetic aviation fuel (or e-SAF) the estimated production cost is 10 times higher. While it applies to all carriers departing EU airports, this impacts EU carriers proportionally more as a greater proportion of their activity is within the EU. Several policy options may be available to mitigate these additional costs, including a SAF border adjustment mechanism, levies for flights via non-EU hubs, free SAF allowances in the EU ETS, a revenue certainty mechanism for fuel producers/suppliers, and a book and claim system for an EU-wide SAF market.
- A proposed revision of the Energy Taxation Directive, which would remove the exemption for aviation fuel, has not yet been adopted and remains under discussion. If adopted, it would further increase costs for EU air carriers and impact on their competitiveness versus non-EU carriers.

Infrastructure and resources

- *SAF Production*: The EU is among the global leaders in SAF production, but relies heavily on imported feedstocks, with potential risks to supply availability and production. The Renewable Energy Directive (RED III) has a more restrictive list of compliant feedstocks compared to CORSIA; harmonisation of feedstocks would reduce the risk of feedstock shortages and improve resilience, but could reduce the environmental benefits. There is no e-SAF production at commercial scale in the EU despite the ReFuelEU Aviation mandate requiring supply of e-SAF from 2030 onwards. Production facilities have significant financing requirements and de-risking private investment may be required: measures for this are developed in the Sustainable Transport Investment Plan, with the potential for the EU to lead the way in the commercialisation of e-SAF.

- *Aerospace*: The EU has a strong aerospace industry, but its strategic importance is not recognised through a dedicated industrial strategy which could boost its competitiveness through targeted measures and investment. Given the linkages between civil and military aerospace technology, strategic autonomy may depend on the ability to produce military aerospace systems fully within Europe. However, the EU trails the USA in military aerospace funding, which can also enhance the competitiveness of the civil aerospace industry as innovations developed for a military use may later diffuse into civil applications. Recent policy changes such as the European Defence Fund may help to improve access to funding. The aerospace sector is highly reliant on access to critical raw materials, most of which are sourced outside the EU; while the Critical Raw Materials Act supports the aerospace sector's access to these resources, the industry's priority could be more recognised. The EU is well positioned to lead the development of new aircraft propulsion technologies that promise to deliver zero-emission aviation in the future, supported by public funding for early-stage research and development. Given that these technologies are not mature, this is a long-term aspect that will not deliver immediate competitive benefits in the coming years.
- *Artificial Intelligence*: The use of AI in aviation offers many potential use cases and benefits that can improve performance and lower operational costs, supporting the competitiveness of the sector. However, the aviation regulatory framework will require further development, particularly for airworthiness, safety, and security.

Economic

- *Market Structure:* The market structure of airlines is driven by the international aero-political environment, with all three global airline alliances of Full-Service Carriers (FSCs) well represented in the EU, which also has a large Low-Cost Carrier (LCC) representation. Both FSCs and LCCs contribute to Europe's high level of air connectivity. EU hub airports and their associated hub airlines also contribute to a high level of hub connectivity for air passengers. The strong aerospace sector in Europe is in competition with the larger US aerospace sector, as well as smaller sectors in China, Canada and Brazil. The aviation fuel industry is concentrated among a few suppliers per airport, while the SAF fuel supply market is highly concentrated. These market structures broadly contribute positively to the EU's competitiveness on the global stage through a competitive airline industry and aerospace and fuel industries that can leverage economies of scale.
- *Energy costs*: The EU faces energy costs around twice as high as equivalent costs in China and the USA, which places a cost pressure on the energy-intensive aerospace and SAF production industries in Europe versus these competitors, and puts EU production at a competitive disadvantage.

Financial

- *Profitability:* EU air carriers are moderately profitable, but face competition from comparator third country carriers including Turkish Airlines, Emirates, and Qatar Airways with higher levels of profitability. EU airports tend to be more profitable due to private ownership and a higher focus on profitability to generate returns for investors as a result. European aerospace firms report similar levels of profitability to competitors, indicating the underlying strength of the EU industry. Air navigation service providers tend to be less profitable as they face economic regulation on cost-effectiveness, which aims to simulate competitive market conditions and improve cost-efficiency as a result.

- *Cost of capital:* While EU carriers tend to have strong credit ratings relative to third country comparators, they face a higher cost of capital due to a smaller capital market than the USA; the relaxation of ownership rules for EU air carriers could allow greater access to international capital markets and lower financing costs for EU airlines, but risks the loss of traffic rights.

Future scenarios

- *Traffic projections:* EU passenger traffic is forecast to grow at a lower rate than that of the comparator third countries analysed in this study. As a result, the EU's share of global passenger demand is projected to decline by 3.5 percentage points to 15.8% in 2053, underscoring the importance of strengthening competitiveness over the medium to long term.
- *Risks to traffic forecasts*: Looking forward, the EU faces possible challenges to its competitiveness in the medium- to long-term future. These include the compliance costs associated with EU ETS and ReFuelEU, increasing cost pressures on EU air carriers relative to third-country carriers, as well as the need for substantial increases in the capacity of the aviation sector (including airports, aerospace, and air navigation services) and in the production capacity for Sustainable Aviation Fuels (SAF), particularly synthetic e-SAF. In aerospace, securing European strategic autonomy in civil and military aerospace will entail costs, as it could increase protectionism and tariffs. The EU has already acted to mitigate this risk by securing a zero-tariff regime for aerospace parts with the USA (European Commission, 2025). On the upside, a potential future easing of restrictions for EU air carriers overflying Russia would improve their competitiveness on routes to/from China, although airport slot portfolios may need to be adjusted to benefit from this.

6. SUMMARY AND RECOMMENDATIONS FOR A STRATEGIC ACTION PLAN FOR THE EU AVIATION SECTOR

6.1. Introduction

This chapter sets out the main findings on the current competitiveness of the EU aviation sector and recommendations for a strategic action plan to improve this. The aim of these recommendations is to maintain and/or improve the competitiveness of the EU aviation sector, supporting a level playing field within the EU and between the EU and third countries, as well as leveraging the relative advantages that the EU aviation sector currently holds.

6.2. Competitiveness of the EU aviation sector – summary of main findings

6.2.1. Competitive strengths

The EU aviation sector has many positive elements influencing its competitiveness within the EU and between the EU and third countries. Most notably, the EU has a large and mature aviation sector with a well-developed, competitive intra-EU aviation market benefitting consumers, as well as strong inter-regional connectivity and provisions to protect fair competition with third countries (although the effectiveness of these provisions is unclear). It has a strong aerospace sector with world-leading manufacturers and an extensive supply chain and a strong SAF production industry. It has a regulatory acquis aimed at creating a level playing field that is more developed than many third country comparators.

6.2.2. Threats to competitiveness

The sector is challenged by a number of competitive threats. The most significant challenges include higher costs for EU air carriers and EU hub airports compared to their third country competitors, due to the EU's stronger decarbonisation policies relative to the corresponding policies in third countries. There is also a risk that both the EU aerospace industry and the EU SAF production industry are more exposed to high energy prices compared to their competitors in third countries, placing them at a cost disadvantage.

6.2.3. Opportunities to improve competitiveness

Opportunities exist to maintain and improve competitiveness in the future, notably through achieving a leading position in the production of SAF and e-SAF across the globe, developing new technologies such as electric/hydrogen aircraft and air traffic management concepts, as well as boosting working conditions and the attractiveness of the sector to workers.

6.2.4. Specific findings

c. Aero-political

- The European aviation single market has been broadly **successful in reducing barriers to entry** for air carriers and creating a **competitive market for intra-EU air services**.
- The EU maintains **fair competition clauses** for air carriers in many air services agreements in addition to **Regulation 2019/712** safeguarding competition in air transport, which allows for redressive measures to be taken if non-EU carriers act in an uncompetitive manner (such as operating aid for air carriers which distorts competition). It is **unclear how these clauses and Regulation are used** and the **extent to which they are effective**.

- EU air carriers currently cannot overfly Russian airspace, while Chinese carriers can still do so. This creates a **competitive disadvantage on routes to the Far East** (particularly China). **The EU's ability to address this is limited**.

d. Regulatory

- The EU's decarbonisation policy in aviation has a **high level of ambition** and sets the framework for the EU to lead decarbonisation efforts in global aviation. This **increases costs for air carriers** to comply with the environmental policy which impacts on competitiveness for air carriers and airports. **EU air carriers are more exposed to these costs** as a higher proportion of their operations are in scope of the decarbonisation policies compared to third country carriers. There is **mixed evidence** on the extent to which this leads to **traffic shifting to third country airport hubs** where the non-EU leg of the journey is not subject to the SAF requirement.
- A range of options to adapt the current ReFuelEU Aviation legislative framework are currently under consideration by industry stakeholders. The most feasible options include an **extension of SAF allowances in the EU ETS** beyond the current scheme ending in 2030; a **revenue certainty mechanism for SAF production**; and use of a **book and claim system for the ReFuelEU Aviation** SAF mandates.
- Other possible options include the creation of a SAF border adjustment scheme (equivalent to the existing carbon border adjustment mechanism for other industries) and a levy for flights not covered by EU decarbonisation legislation, but these options are less feasible due to a possible incoherence with international obligations under the Chicago Convention.
- The EU's **aviation regulatory acquis is mature** and **contributes towards a competitive market** while ensuring consumer confidence in the sector's safety and passenger rights.

e. Infrastructure & resources

- **The EU is among the global leaders in the aerospace industry** and is well positioned to lead the development of new aircraft technologies in the context of decarbonisation efforts but will **require public funding and support** to fully capitalise on this opportunity.
- **The civil and military aerospace industries are strategically important to the EU** but **neither has its own industrial strategy** to address the competitiveness challenges it faces, such as high energy prices, defence expenditure, skills and labour shortages, access to raw materials, and strategic autonomy (which is increasingly relevant in the current geopolitical context).
- **The US aerospace industry benefits from significantly higher military expenditure than the EU**, which can allow for innovations to diffuse into the civil aerospace segment and boost competitiveness of the US industry through achieving synergies between the civil and military segments of the industry. EU public funding into defence is available but little support focused on military aerospace is currently offered.
- **Europe is among the leaders of SAF production**, with enough production capacity to meet the 2030 ReFuelEU mandate blending target of 6% of aviation fuel (but not the e-SAF mandate, as noted below). However, Europe currently relies heavily on **imported feedstocks from third countries** which represents a risk that **access to feedstocks could be constrained in the future** if these countries reduce exports of feedstocks.

- There is currently **no commercial-scale production of e-SAF in Europe**, despite the ReFuelEU Aviation mandate for e-SAFs beginning in 2030. **No e-SAF production projects have yet reached a Final Investment Decision (FID)** to be constructed.
- The **attractiveness of the aviation sector as a labour market varies** based on the sub-sector (for example, ground handling is less attractive due to lower pay and the manual nature of the role), while there are **staff and skills shortages** in industries such as air navigation services and aerospace.
- **Artificial intelligence (AI) in aviation shows many potential use cases** that could enhance competitiveness of the EU aviation sector. However, the **regulatory basis for its use is not yet developed** (e.g. for airworthiness, safety, and security regulations).
- The shift towards trajectory-based operations (TBO) in air navigation services is a significant development that can offer more efficient and environmentally friendly flight paths; **technology to implement it should be a priority area for investment for ANSPs and SESAR**.

f. Economic

- The market structure of the EU aviation sector has strengths that support its competitiveness. The EU airline industry has strong connectivity driven by a **high proportion of Low-Cost Carriers and several major EU hub airports**. The **EU aerospace industry is dominated by large firms**, which benefit from economies of scale enabling them to compete with third-country competitors. **Aviation fuel is largely supplied by major providers** which can achieve economies of scale in production, helping to lower costs for airlines but limiting choice for airlines than in a competitive market structure.
- Europe faces **significantly higher energy costs** for energy-intensive industries compared to third country competitors such as the USA and China, placing its aerospace and SAF production at a cost disadvantage in global markets.

g. Financial

- **EU airlines are moderately profitable** and face competition from third country competitors with higher profit margins, and therefore a higher ability to withstand competition from EU carriers.
- **EU airports tend to be more profitable than non-EU airports**, which likely represents a higher commercial focus, as many EU airports are privately owned and/or operated.
- **EU aerospace firms have broadly similar levels of profitability as their rivals**, despite facing higher energy costs, demonstrating their underlying **strengths on the global stage**.
- **EU air navigation service providers tend to be less profitable than non-EU providers**, because the EU industry is subject to economic regulation and cost-effectiveness performance targets which **benefits airlines through lower navigation costs and supports overall aviation industry competitiveness**.
- **EU air carriers tend to have higher credit ratings than non-EU peers but face a higher cost of capital** due to a smaller capital market than the USA. A possible relaxation of ownership and control rules for air carriers could improve access to capital and lower costs for airlines, but an airline majority-owned by non-EU nationals may lose its intra-EU traffic rights, depending on factors including the non-EU country with majority ownership and the existence of air service agreements between the EU/Member States and the non-EU country.

6.3. Recommendations for a strategic action plan

6.3.1. Overcoming existing competitiveness challenges

In order to maintain and improve the competitiveness of the EU aviation sector in the medium- to long-term, there are two key aspects to consider. The first is to address existing challenges to competitiveness. These include the additional costs faced by EU air carriers due to decarbonisation policy and the knock-on impact on airport hub competitiveness; it is highly relevant to consider the existing policy and consider possible options to address the impacts on competitiveness for the EU airline and airport industries. This should be done in tandem with measures aiming to develop the production of SAF in Europe, as the possibility of lowering SAF costs through economies of scale has clear synergies with measures to reduce the cost disadvantage faced by EU carriers. Another key issue to address is the competitiveness of the European aerospace industry, for which an important recommendation is to develop an aerospace industrial strategy to support this important industry for the EU, particularly in the current geopolitical climate.

6.3.2. Leveraging future opportunities

The second aspect is to leverage the strong position that the EU aviation sector currently holds, by taking a leading role in shaping the future global aviation sector. This includes achieving a leading position in the production of SAF and e-SAF, the development of new aircraft technologies such as electric, hydrogen, and advanced air mobility aircraft, the use of AI in the aviation sector and the shift to new technologies enabling more efficient and cost-effective air traffic management. Measures to boost SAF production are complementary to measures addressing the impacts on competitiveness from existing decarbonisation policy, while measures to develop new aircraft technology are complementary to the focus on the EU aerospace sector. Both will require significant public and private investment and offer the potential for the EU aviation sector to be at the forefront of the global industry in the future.

6.3.3. Specific recommendations

a. Aero-political

- **Continue to use fair competition clauses** in air services agreements with EU Member States, and also **undertake a research study** to assess their effectiveness.
- **Conduct an evaluation of Regulation 2019/712** safeguarding competition in air transport to verify its effectiveness, as it is currently unclear what impact it has had.

b. Regulatory

- The following measures should be actively considered to boost the competitiveness of the EU aviation sector within the ReFuelEU Aviation framework:
    - an **extension of SAF allowances in the EU ETS** beyond 2030;
    - introduction of a **revenue certainty mechanism for SAF production**; and
    - development of a **book and claim system for ReFuelEU Aviation**.
- **Remove the possibility for fuel suppliers to levy surcharges** on customers in commercial agreements to cover possible fines for non-compliance with the ReFuelEU Aviation mandate, and implement increased scrutiny and enforcement by national/EU authorities.

- **Assess the proportionality of the Energy Taxation Directive (ETD) including aviation fuels** and its coherence with the other environmental policies (if the currently blocked talks resume in the future). There is a risk that the ETD would increase costs for air carriers and may impact their competitiveness versus non-EU carriers, although evidence on the extent of this impact is inconclusive from existing research across the industry.

c. Infrastructure & resources

- **Create an aerospace industrial strategy** to remain competitive in the future. The strategy should focus on:
    - **securing access to critical raw materials** such as rare earth elements specifically for aerospace uses;
    - addressing structural barriers to competitiveness such as **high energy prices**; and
    - **recognising the dual civil-military aerospace industry**, where innovations can diffuse from civil to military uses and vice versa, with **targeted public funding for civil-military innovation**.
- **Provide public funding for early-stage development of new aircraft technologies** (such as electric aircraft, hydrogen aircraft, and advanced air mobility) to be among the leaders in such technologies, stimulate their commercialisation and reduce risks for investors.
- **Develop an EU-wide strategy on SAF supply**, including securing access to feedstocks, in order to support the production and supply of SAF at competitive rates versus third countries, and help to establish the EU as a major hub of SAF production (in addition to the regulatory measures to boost competitiveness within the ReFuelEU Aviation framework noted above).
- **Consider expanding the list of SAF feedstocks** compliant with the Renewable Energy Directive to reduce the risk of future feedstock shortages, whilst ensuring that the environmental effectiveness of approved feedstocks remains high.
- **Provide public support to commercial-scale e-SAF production** e.g. through co-financing investments or offering other market-based incentives to de-risk private financing (such as revenue certainty mechanisms, and double-sided auctions for e-SAF).
- **Create an aviation employment strategy** to identify the required skills in each industry, provide funding for education and training to develop these skills, and improve the attractiveness of the sector in industries where this is weaker (such as ground handling).
- **Continue the development of new air traffic management technologies** supported by the SESAR programme, supporting the transition to trajectory-based operations.
- **Incorporate AI-specific factors into the existing aviation acquis** (notably in areas such as airworthiness, safety, and security) in a proportionate way, allowing the benefits of AI to emerge while maintaining or enhancing safety standards.

d. Economic

- **Consider encouraging greater competition for airport fuel supply** in order to lower prices through market forces, although this should be weighed against the potential inefficiency and impact on infrastructure of multiple fuel providers serving the same airport.

- **Introduce structural economic support for the aerospace and SAF production industries** to address the high energy prices they face; this would require cooperation with policymakers in the energy sector to determine which options are feasible.

e. Financial

- **Consider the trade-off that, while relaxing ownership and control rules** for EU air carriers could **lower financing costs** for air carriers and support their competitiveness, it risks **losing access to intra-EU traffic rights** if a carrier is majority-owned by non-EU nationals.

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A. IN-DEPTH FINANCIAL ANALYSIS OF EU AND NON-EU AVIATION SECTOR

A.1. Overview of financial metrics used

The financial performance of the aviation sector is a key facet of its competitiveness. Two key indicators of the aviation sector's financial performance have been assessed in this report – profitability and access to capital. These two metrics capture, respectively, the current financial success of companies, and their ability to expand or maintain their competitive position. Further description of these metrics is outlined below.

These two indicators are used in this annex to provide a more detailed assessment of the financial performance of the aviation sector, in both the EU and in third countries, covering the airline, airport, aerospace, ANSP, GHSP, and aviation fuel industries. For each of these industries, the analysis is based on a sample of firms which is representative of the different business models, sizes and geographies in which these companies operate (e.g., for airlines, it includes a mix of LCCs and FSCs, as well as airlines of different sizes). In some cases, the sample size is limited due to limited publicly available financial information where firms are privately owned and do not produce publicly available financial accounts.

A.1.1. Profitability

Profitability is a key indicator of the financial health of a company, allowing it to remain competitive. The profitability of a company can be measured in numerous ways. One commonly-used measure of profitability is known as EBIT – earnings before interest and tax. This is also known as operating profit, and it measures a company's profitability from its core business operations, ignoring the cost of servicing debt (i.e. interest payments, which are discussed below) and government taxes (to allow for a fairer comparison across businesses operating in different jurisdictions with different rules and levels of taxation).

To allow for comparability across companies of different sizes, this section analyses the EBIT *margins* of the selected companies, calculated as EBIT divided by revenue, which is independent of the reporting currency of the firms. These figures are taken directly from the financial statements of the sample of companies analysed. EBIT margins for 2024 are used, this being the most recent calendar year for which financial statements are generally available[45]. 2024 can also be considered as a return to normality for the aviation sector, following the severe negative impact of Covid on the industry from 2020 – 2023.

A.1.2. Access to capital

Access to capital is another key indicator of a company's financial health, indicating how easily it is able to raise capital at a reasonable cost to allow for expansion or maintenance of its assets. Firms which are profitable in the short term, but which cannot raise capital easily are likely to become less competitively successful over time. This is particularly relevant to the capital-intensive parts of the aviation sector, including airlines (for purchase of aircraft) and aerospace companies (investment in production facilities, purchase of aircraft raw materials, etc.).

Companies can access capital from two sources – creditors (e.g. banks), who provide debt financing through the issuing of loans to the company, and shareholders, who provide equity financing through

[45] For certain entities in the sample, financial years do not align with calendar years. For these entities, the financial year which most closely overlaps with the 2024 calendar year is used.

the purchasing of shares in the company. Equity financing is more expensive for companies than debt financing, as shareholders take on more risk that debtholders, only receiving a return on their investment in the company after debt repayments have been made.

The ability of a company to access capital from creditors and / or shareholders can be measured in different ways. Here, two key measures of the ability of a company to access capital are considered:

- **Cost of capital** – the cost of capital is a measure of the total average cost of borrowing across a company's debtholders and shareholders, weighted by the company's proportion of debt and equity financing[46]. This section uses cost of capital figures calculated at an industry level by NYU Stern academic Aswath Damodaran[47]. These figures are commonly used by corporate finance and business valuation practitioners. A higher cost of capital indicates that it is more expensive for a business to acquire funds, negatively impacting its competitiveness vs. companies with a lower cost of capital.
- **Credit ratings** – credit ratings are assessments carried out by specialised credit ratings agencies of the credit risk of a company – i.e. how likely the company is to default on its debt. Credit ratings reflect the riskiness of a company's debt, not its equity (unlike the cost of capital, which takes both the cost of debt and the cost of equity into account). The main credit ratings agencies are Moody's, S&P Global and Fitch Ratings. Credit ratings are assessed on a letter scale, with A grades indicating the highest level of creditworthiness, B/C grades indicating more risky debt, and D grades indicating that the company has defaulted on its debt. Companies with higher credit ratings are generally able to borrow more cheaply than companies with lower credit ratings. The chart below gives an overview of the credit rating scales of the big three credit ratings agencies, delineating between "investment grade" debt and "non-investment grade" debt (also known as "junk").

Figure A.1: Credit ratings scales - Moody's, S&P Global and Fitch Ratings

	Moody's	S&P	Fitch
Investment Grade	Aaa	AAA	AAA
	Aa1	AA+	AA+
	Aa2	AA	AA
	Aa3	AA–	AA–
	A1	A+	A+
	A2	A	A
	A3	A–	A–
	Baa1	BBB+	BBB+
	Baa2	BBB	BBB
	Baa3	BBB–	BBB–
Non-Investment Grade *High Yield "Junk"*	Ba1	BB+	BB+
	Ba2	BB	BB
	Ba3	BB–	BB–
	B1	B+	B+
	B2	B	B
	B3	B–	B–
	Caa	CCC	CCC
	Ca	CC	CC
	C	C	C
Default	C	D	D

Source: ETF Trends – Understanding High-Yield Bonds.

[46] This is often referred to as the WACC – the weighted average cost of capital.

[47] The cost of capital cannot be observed directly, hence, these industry averages are as a suitable proxy for the cost of capital of the sample of aviation companies.

A.2. Airlines

A.2.1. Sample of airlines considered in financial analysis

The tables below show the EU and non-EU airlines considered in the analysis, along with a brief description of each of these, plus a link to their financial statements, which are used to calculate these firms' EBIT margins. These firms represent a sample of airlines of different sizes and business models within and outside of the EU. Table A.1 indicates whether these airlines are Full-Service Carriers (FSCs) or Low-Cost Carriers (LCCs).

Table A.1: Sample of EU airlines considered in analysis of aviation sector financial performance

Airline / airline group	Type	Description	Link to financial statements
Lufthansa Group	FSC	German aviation group including Lufthansa, SWISS, Austrian and Brussels Airlines; major European hubs; extensive global long-haul and intra-European network; primarily Full-Service Carriers (FSCs).	Link
Air France-KLM	FSC	Franco-Dutch airline group; Paris CDG and Amsterdam hubs; global long-haul and European network; Full-Service Carriers (FSCs) and SkyTeam leaders.	Link
Iberia (IAG)	FSC	Spanish FSC based in Madrid; strong Europe–Latin America long-haul focus plus European short-haul network; member of IAG and Oneworld alliance.	Link
Ryanair	LCC	Ireland-based Low-Cost Carrier (LCC); extensive European short-haul point-to-point network; ultra-low-cost model with high aircraft utilisation.	Link
easyJet	LCC	UK-based Low-Cost Carrier (LCC); large European short-haul network; focus on primary airports and leisure/business routes.	Link
Wizz Air	LCC	Hungary-based Ultra-Low-Cost Carrier (ULCC); extensive Central and Eastern European network plus Middle East routes; strong cost-focused expansion model.	Link
Finnair	FSC	Finland's flag carrier and FSC; Helsinki hub; European network with strategic long-haul	Link

Airline / airline group	Type	Description	Link to financial statements
		focus on Asia and North America; Oneworld member.	
SAS	FSC	Scandinavian FSC serving Denmark, Sweden and Norway; Copenhagen hub; European network and long-haul services to North America and Asia; SkyTeam member.	Link
Aegean Airlines	FSC	Greek FSC; Athens hub; strong domestic and European network with seasonal leisure focus; Star Alliance member.	Link
Air Baltic	FSC	Latvia-based hybrid carrier; Riga hub; Baltic and wider European network; mix of point-to-point and connecting traffic.	Link
Norwegian Air Shuttle	LCC	Norway-based Low-Cost Carrier (LCC); primarily European short-haul network; previously long-haul low-cost, now focused on Nordic and leisure markets.	Link
Azores Airlines	FSC	Portugal-based FSC subsidiary of SATA; connects Azores with mainland Portugal, North America and Europe; niche transatlantic leisure and diaspora routes.	Link
Volotea	LCC	Spain-based Low-Cost Carrier (LCC); focuses on connecting secondary European cities with point-to-point leisure-oriented routes.	Link

Source: Steer analysis.

Key EU airlines whose 2024 financial statements were not publicly available at the time of writing, and which therefore could not be included in this analysis included: LOT Polish Airlines; ITA Airways, Binter Canarias; TAP Air Portugal; and Air Europa.

Table A.2: Sample of non-EU airlines considered in analysis of aviation sector financial performance

Airline / airline group	Type	Description	Link to financial statements
American Airlines	FSC	US-based global network carrier, with extensive domestic and international long-	Link

Airline / airline group	Type	Description	Link to financial statements
		haul network across Americas, Europe and Asia; Oneworld member.	
Delta Air Lines	FSC	Major US FSC with extensive domestic network and strong transatlantic and transpacific presence; global hub-and-spoke model; SkyTeam founding member.	Link
United Airlines	FSC	US FSC operating large domestic and international network across Americas, Europe and Asia-Pacific; major hub system; founding Star Alliance member	Link
Southwest	LCC	US LCC focused primarily on domestic point-to-point services, with limited near-international routes to Mexico, Caribbean and Central America.	Link
China Southern Airlines	FSC	China-based FSC; extensive domestic network plus long-haul services to Europe, North America and Asia-Pacific; major hubs in Guangzhou and Beijing.	Link
China Eastern Airlines	FSC	Shanghai-based FSC; strong domestic Chinese network and international services across Asia, Europe, North America and Oceania; SkyTeam member.	Link
Air China	FSC	China's flag carrier and FSC; Beijing hub; comprehensive domestic network and long-haul routes to Europe, North America and Asia-Pacific; Star Alliance member.	Link
Turkish Airlines	FSC	Turkey-based FSC; Istanbul hub; extensive global network spanning Europe, Asia, Africa and Americas; strong international connectivity; Star Alliance member.	Link
Emirates	FSC	Dubai-based FSC; long-haul hub-and-spoke model connecting Europe, Asia-Pacific, Africa and Americas via Middle East; predominantly international widebody operations.	Link

Airline / airline group	Type	Description	Link to financial statements
Qatar Airways	FSC	Doha-based FSC; global long-haul network linking Europe, Asia-Pacific, Africa and Americas via hub strategy; Oneworld member.	Link
Air Canada	FSC	Canada's flag carrier and FSC; strong domestic and transborder US network plus long-haul routes to Europe, Asia-Pacific and Latin America; Star Alliance member.	Link
British Airways (IAG)	FSC	UK-based FSC; London Heathrow hub; global long-haul and European short-haul network; founding Oneworld member; part of International Airlines Group (IAG).	Link

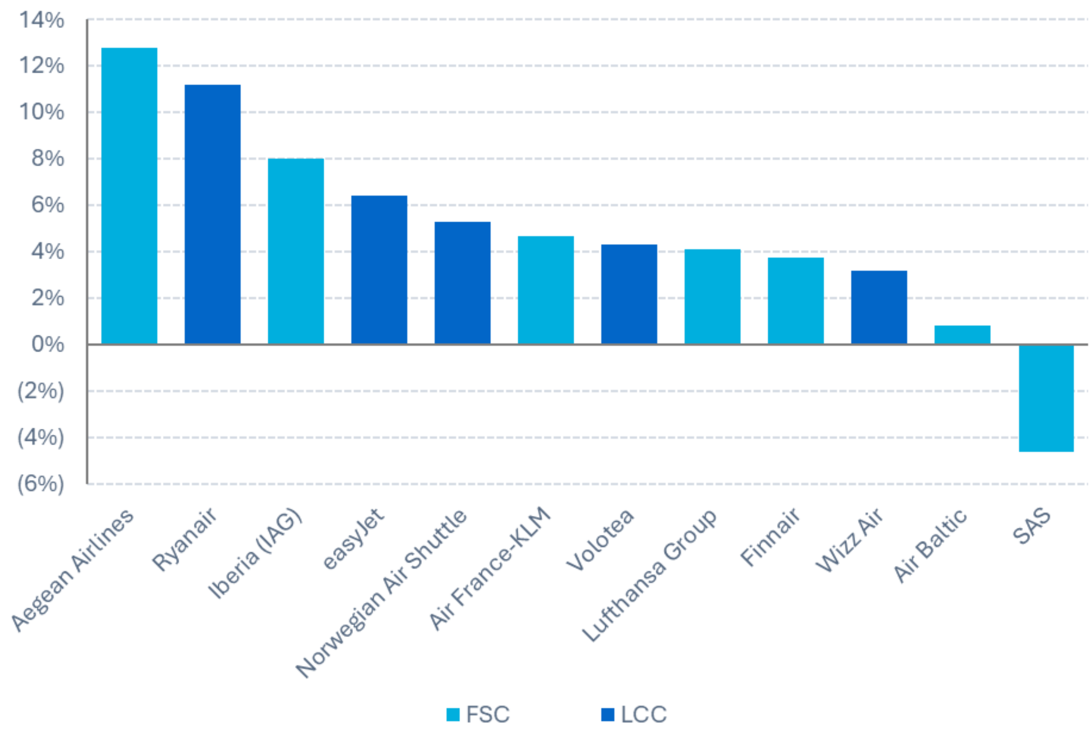
Source: Steer analysis.

The key non-EU airline whose 2024 financial statements was not publicly available, and which therefore could not be included in this analysis was Etihad.

A.2.2. Profitability (EBIT margins) of sample of airlines

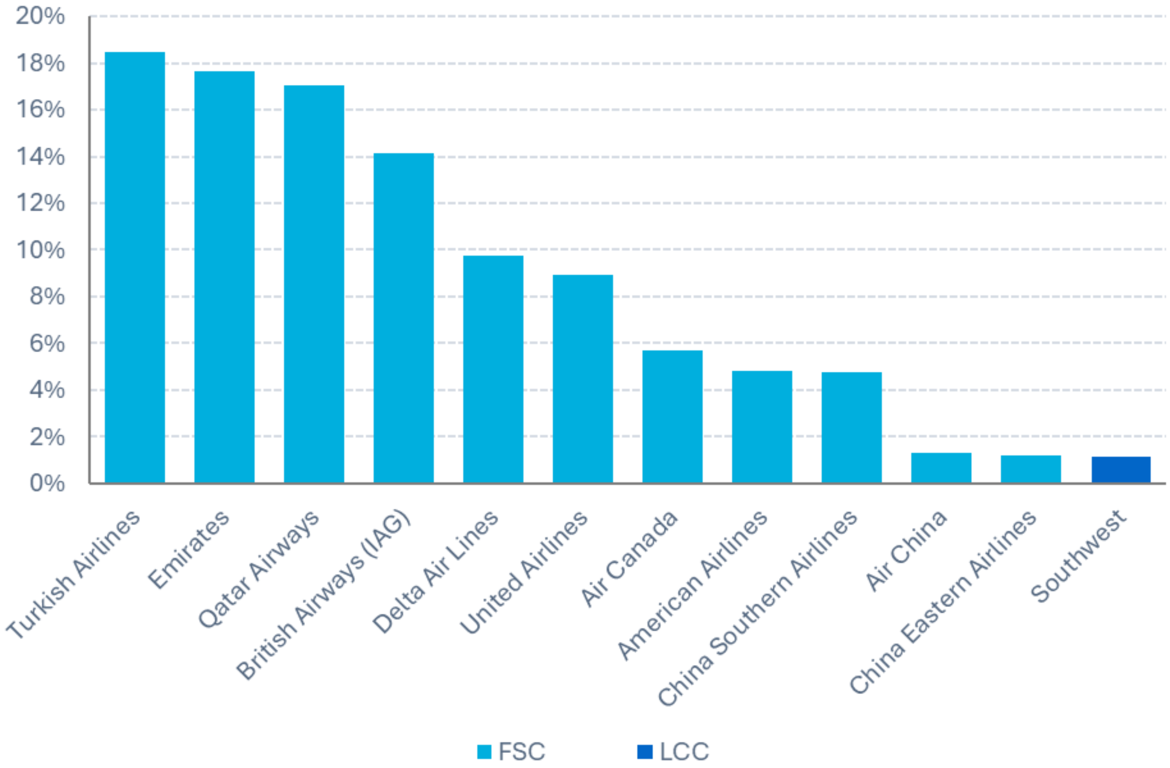
The charts below show the 2024 EBIT margins of the sample of EU and non-EU airlines.

Figure A.2: 2024 EBIT margins of sample of EU airlines



Source: 2024 financial statements, as outlined in Table A-1. Note: Azores Airlines excluded from chart due to very low profitability of *negative* 16.7%.

Figure A.3: 2024 EBIT margins of sample of non-EU airlines

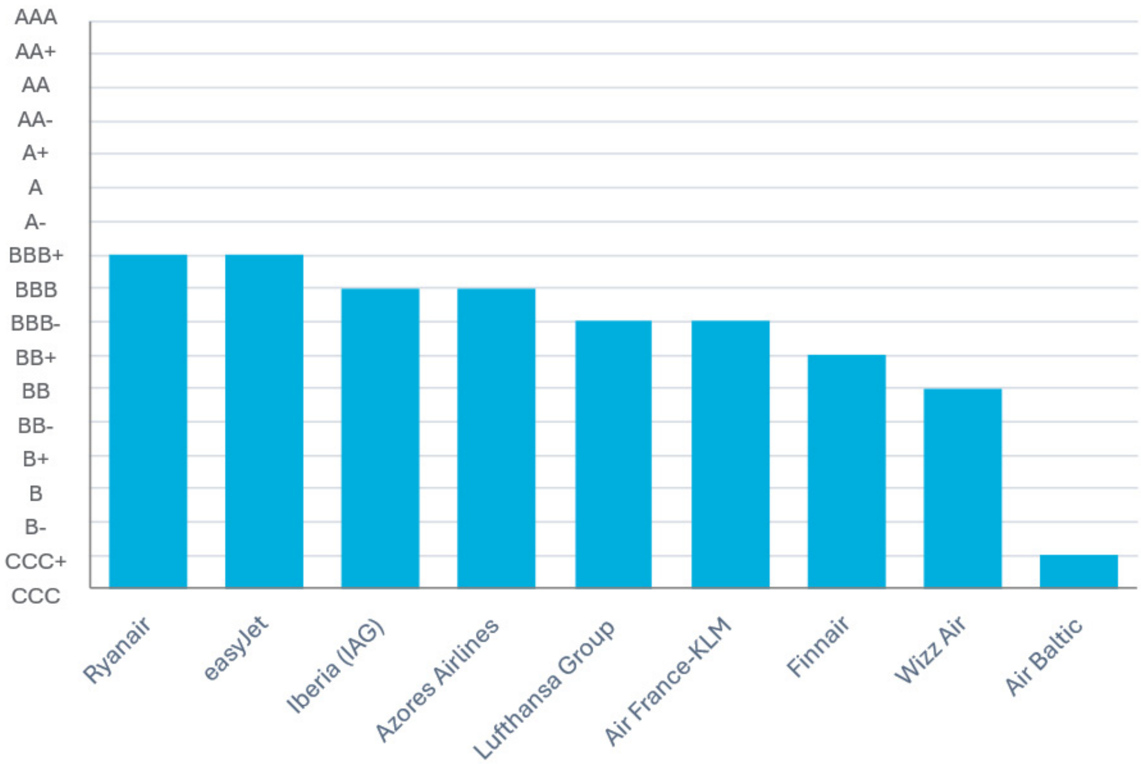


Source: 2024 financial statements (linked in A.2.1, as outlined in Key EU airlines whose 2024 financial statements were not publicly available, and which therefore could not be included in this analysis included: LOT Polish Airlines; ITA Airways, Binter Canarias; TAP Air Portugal; and Air Europa.

A.2.3. Access to capital (credit ratings) of sample of airlines

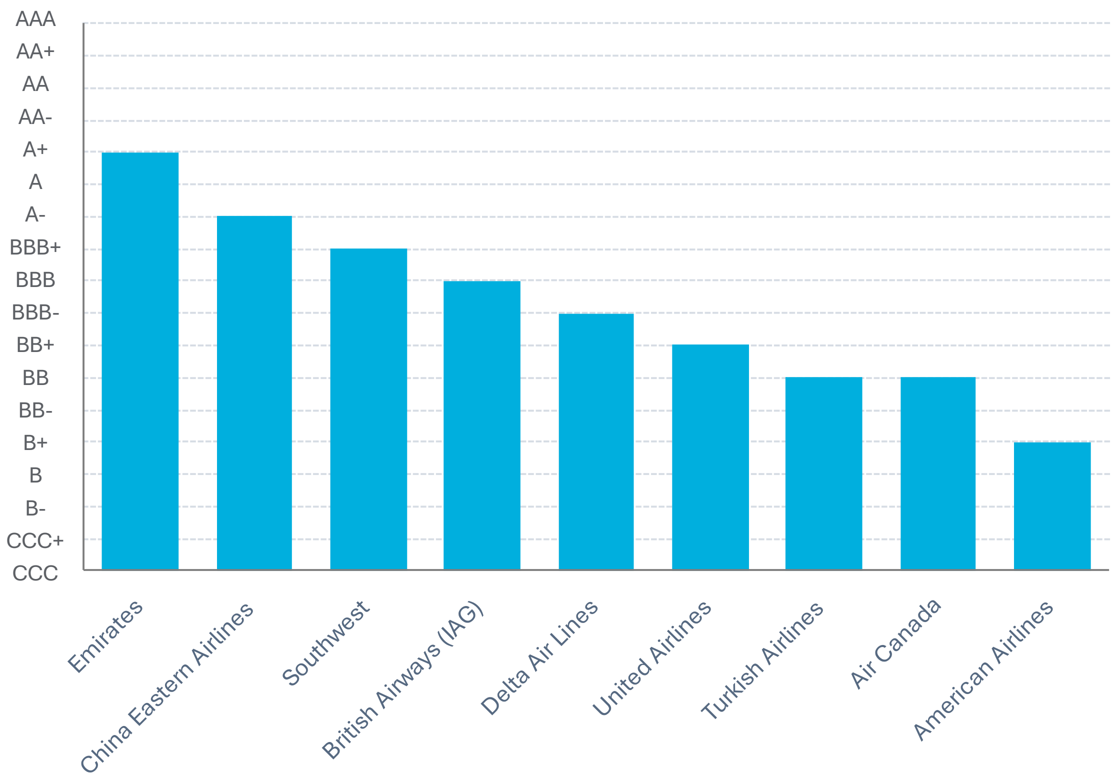
The charts below show the credit ratings of the sample of EU and non-EU airlines. There are fewer airlines in these charts than in the EBIT margin charts above, as fewer airlines receive credit ratings on their debt than publish publicly-available financial statements.

Figure A.4: Credit ratings of sample of EU airlines



Source: Moody's, S&P Global and Fitch Ratings.

Figure A.5: Credit ratings of sample of non-EU airlines



Source: Moody's, S&P Global and Fitch Ratings.

A.3. Airports

A.3.1. Sample of airports considered in financial analysis

The tables below show the EU and non-EU airports considered in the analysis, along with a brief description of each of these, plus a link to their financial statements, which are used to calculate these firms' EBIT margins. These firms represent a sample of airports of different sizes and business models within and outside of the EU. Many airports worldwide are operated as part of airport groups, rather than as standalone airports; where this is the case, this is indicated in the tables below.

Table A.3: Sample of EU airports considered in analysis of aviation sector financial performance

Airport / airport group	Description	Link to financial statements
Groupe ADP (Paris)	Operates Paris CDG, Orly and other global airports; c. 379 million annual passengers across network, with c. 107 million in the Paris region; major Europe–global connections; Air France-KLM, easyJet, Delta, US and Asian carriers prevalent.	Link
Amsterdam	Netherlands' main hub; c. 65 million annual passengers; Europe's top airport for movements; major intercontinental gateway; base for KLM, Transavia; wide European and global network. Also operates other airports in the Netherlands	Link
AENA (Spain)	Spain's airport authority operating 46 airports; c. 350 million passengers annually in total; key hubs Madrid, Barcelona; strong European/Leisure traffic; key carriers include Iberia, Vueling, Ryanair, easyJet.	Link
Fraport (Frankfurt)	Operator of Frankfurt and 29 global airports; Frankfurt handles c. 62 million passengers annually; major European hub serving Lufthansa, Star Alliance; broad European/international connections.	Link
ADR (Rome)	Rome Fiumicino carries c. 45 million passengers annually; Italy's largest airport; international/European network; major base for ITA Airways with strong leisure and long-haul services. Also operates smaller Rome Ciampino airport.	Link
Munich	Munich Airport carries c. 47 million passengers annually; Germany's second largest airport; strong European and intercontinental routes; major Lufthansa and Star Alliance base	Link

Airport / airport group	Description	Link to financial statements
DAA (Dublin)	Dublin Airport carries c. 33 million passengers annually; Ireland's busiest; European, transatlantic routes; major carriers Aer Lingus and Ryanair. Also operates smaller Cork airport.	Link
Athens	Athens Airport carries c. 32 million passengers annually; Greece's main gateway; strong European and growing intercontinental network; major base for Aegean Airlines.	Link
Swedavia (Sweden)	Swedish state airport group including Stockholm Arlanda (c. 27 million passengers), Gothenburg, others; serves European and some intercontinental routes; carriers SAS, Norwegian, Ryanair.	Link
Bratislava	Slovakia's main airport (c. 2 million passengers annually); regional European network; LCCs such as Ryanair and Wizz Air prominent.	Link
Lisbon (ANA)	Lisbon Airport carries c. 31 million passengers annually; Portugal's key hub; European, North America, Africa routes; main base for TAP Air Portugal. Part of ANA, the Portuguese state airport operator.	Link
Vienna	Vienna serves c. 32 million passengers annually; Austria's main hub; European and intercontinental services; major base for Austrian Airlines (Star Alliance).	Link

Source: Steer analysis.

Key EU airports whose 2024 financial statements were not publicly available, and which therefore could not be included in this analysis included: Brussels; Warsaw; Budapest; Prague; Bucharest; Sofia; and Zagreb.

Table A.4: Sample of non-EU airports considered in analysis of aviation sector financial performance

Airport / airport group	Description	Link to financial statements
Atlanta (ATL)	World's busiest airport (c. 105 million passengers annually); major US domestic and international hub; strong North America, Europe and Latin America links; primary hub for Delta Air Lines, significant Southwest presence.	Link

Airport / airport group	Description	Link to financial statements
Dallas (DFW)	c. 85 million passengers annually; major US domestic and Latin America gateway; extensive global network; largest hub for American Airlines, significant Spirit and Frontier operations.	Link
Denver (DEN)	c. 80 million passengers annually; large US domestic hub with growing international services to Europe and Mexico; major base for United Airlines and Southwest.	Link
Chicago (ORD)	c. 75 million passengers annually; major Midwest hub; strong domestic and transatlantic/transpacific connectivity; key hub for United Airlines and American Airlines.	Link
Los Angeles (LAX)	c. 75 million passengers annually; major US West Coast international gateway; strong Asia-Pacific and Latin America links; focus city for American, Delta, United; large foreign carrier presence.	Link
New York (JFK)	c. 65 million passengers annually; primary US international gateway; strong transatlantic and transpacific routes; major base for Delta and JetBlue; significant foreign airline hub.	Link
Toronto (YYZ)	c. 50 million passengers annually; Canada's largest airport; strong US transborder and transatlantic network; global long-haul connectivity; major hub for Air Canada, base for WestJet.	Link
Vancouver (YVR)	c. 30 million passengers annually; key Asia-Pacific gateway for Canada; strong transpacific and US routes; hub for Air Canada, base for WestJet.	Link
Delhi (DEL)	c. 75 million passengers annually; India's largest hub; strong domestic and expanding Europe, North America and Asia network; major base for Air India and IndiGo.	Link
Shanghai (PVG)	c. 75 million passengers annually; major Chinese international gateway; strong Asia-Pacific, Europe and North America links; hub for China Eastern, significant China Southern presence.	Link

Airport / airport group	Description	Link to financial statements
Beijing (PEK)	c. 65 million passengers annually; major domestic and international hub for northern China; strong Asia, Europe and North America links; primary hub for Air China.	Link
Heathrow (LHR)	c. 80 million passengers annually; UK's main hub and Europe's leading long-haul gateway; extensive global network; primary base for British Airways, major Virgin Atlantic presence.	Link

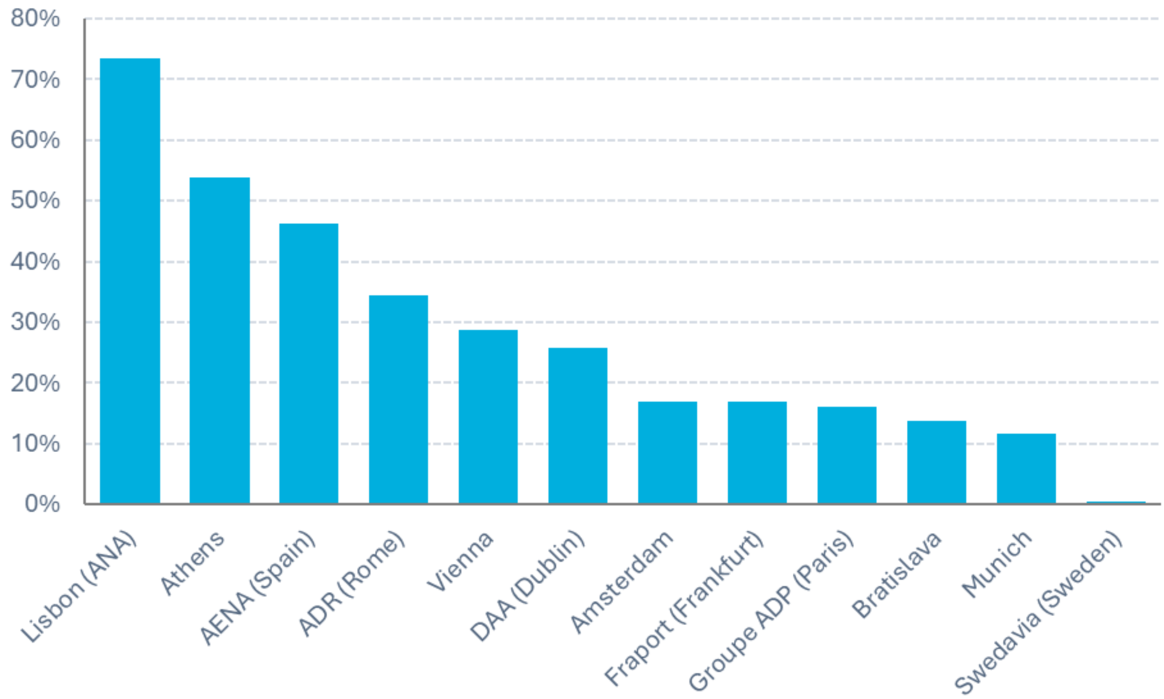
Source: Steer analysis.

Key non-EU airports whose 2024 financial statements were not publicly available, and which therefore could not be included in this analysis included: Dubai; Abu Dhabi; Doha; Istanbul; Sao Paulo; and Rio de Janeiro.

A.3.2. Profitability (EBIT margins) of sample of airports

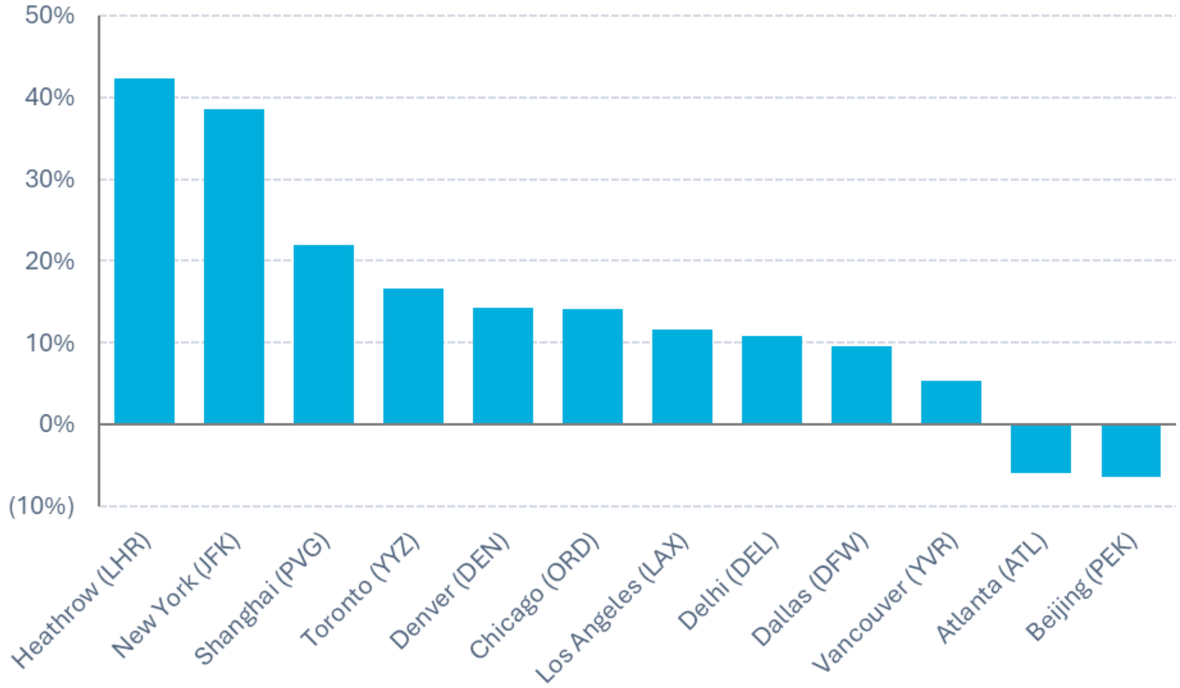
The charts below show the 2024 EBIT margins of the sample of EU and non-EU airports.

Figure A.6: 2024 EBIT margins of sample of EU airports



Source: 2024 financial statements, as outlined in Table A.3.

Figure A.7: 2024 EBIT margins of sample of non-EU airports

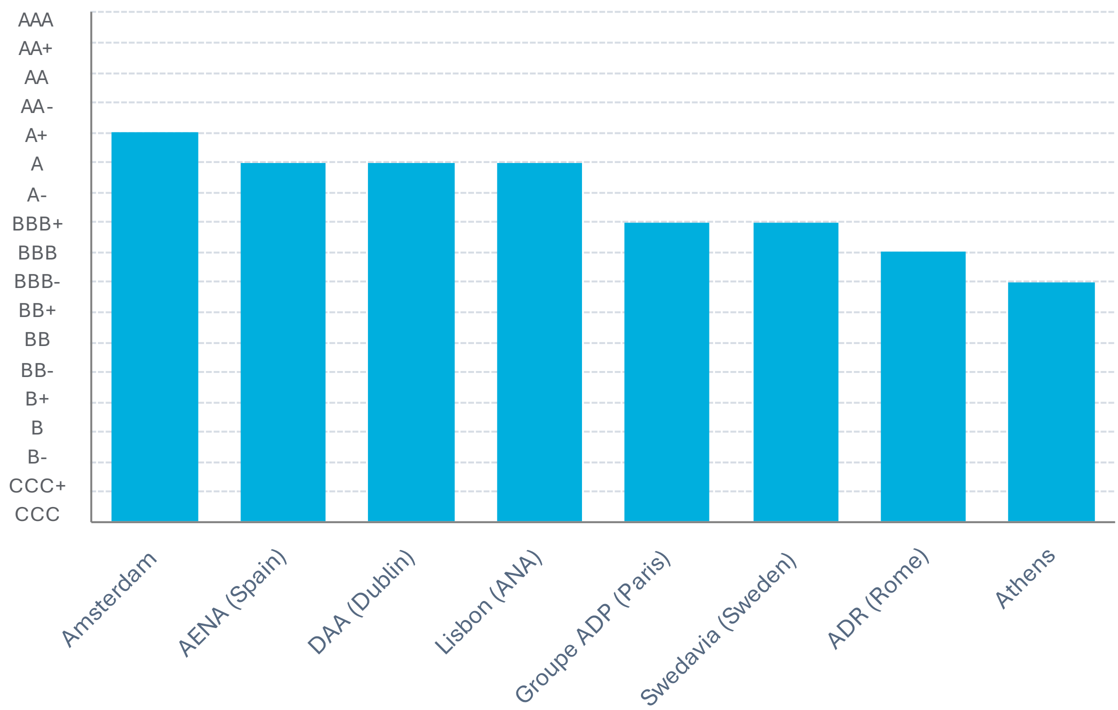


Source: 2024 financial statements, as outlined in Table A.4.

A.3.3. Access to capital (credit ratings) of sample of airports

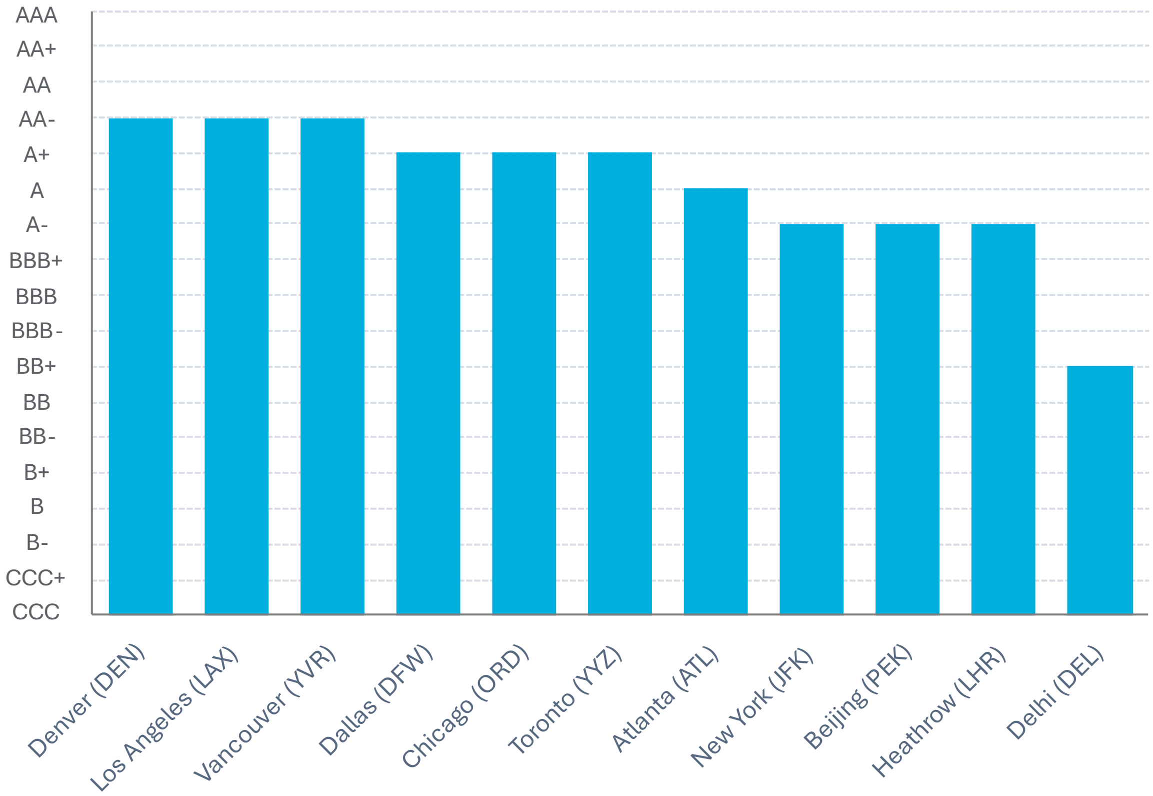
The charts below show the credit ratings of the sample of EU and non-EU airports. There are fewer airports in these charts than in the EBIT margin charts above, as fewer airports receive credit ratings on their debt than publish publicly-available financial statements.

Figure A.8: Credit ratings of sample of EU airports



Source: Moody's, S&P Global and Fitch Ratings.

Figure A.9: Credit ratings of sample of non-EU airports



Source: Moody's, S&P Global and Fitch Ratings.

A.4. Aerospace companies

A.4.1. Sample of aerospace companies considered in financial analysis

The tables below show the EU and non-EU aerospace companies considered in the analysis, along with a brief description of each of these, plus a link to their financial statements, which are used to calculate these firms' EBIT margins. These firms represent a sample of aerospace companies of different sizes and business models within and outside of the EU.

Table A.5: Sample of EU aerospace companies considered in analysis of aviation sector financial performance

Aerospace company	Description	Link to financial statements
Airbus	Europe-based (France/Germany/Spain) aerospace manufacturer; produces A220–A350 commercial aircraft, A400M, satellites and defence systems; key customers include global airlines, governments and space agencies.	Link
Thales	France-based aerospace and defence electronics group; manufacturer of avionics, radars, air traffic management,	Link

Aerospace company	Description	Link to financial statements
	cybersecurity and space systems; customers include airlines, armed forces and ANSPs worldwide.	
Dassault Aviation	France-based manufacturer of Rafale fighter jets and Falcon business jets; key customers include French government, export defence clients and corporate operators globally.	Link
Leonardo	Italy-based aerospace and defence group; manufactures helicopters (AW series), aircraft structures, electronics and defence systems; customers include governments, NATO partners and civil helicopter operators.	Link
Safran	France-based aerospace group; manufactures aircraft engines (CFM joint venture), landing gears, interiors and defence systems; customers include Airbus, Boeing, airlines and governments worldwide	Link
MTU Aero Engines	Germany-based aero-engine manufacturer; develops and maintains commercial and military engines (with Pratt & Whitney, GE); key customers include airlines and armed forces.	Link

Source: Steer analysis.

Table A.6: Sample of non-EU aerospace companies considered in analysis of aviation sector financial performance

Aerospace company	Description	Link to financial statements
Boeing	US-based aerospace manufacturer; produces 737–787 commercial aircraft, defence systems and space products; key customers include global airlines, US Department of Defense and international governments.	Link
Embraer	Brazil-based aircraft manufacturer; produces E-Jet regional aircraft, business jets and defence aircraft; customers include regional airlines, corporate operators and air forces.	Link
Liebherr	Germany/France-based systems supplier; manufactures landing gears, flight controls, environmental control systems; key customers include Airbus and Boeing.	Link

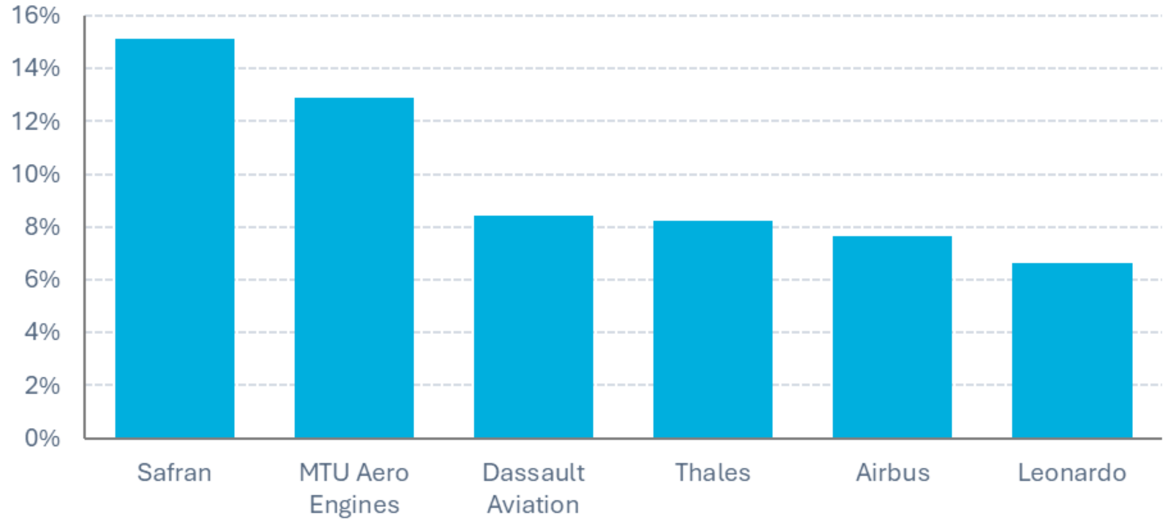
Aerospace company	Description	Link to financial statements
Bombardier	Canada-based business jet manufacturer; produces Global and Challenger series aircraft; customers include corporate, charter and high-net-worth operators worldwide.	Link
Rolls Royce	UK-based aero-engine manufacturer; produces Trent widebody engines and defence propulsion systems; key customers include Airbus, Boeing, airlines and military operators globally.	Link

Source: Steer analysis.

A.4.2. Profitability (EBIT margins) of sample of aerospace companies

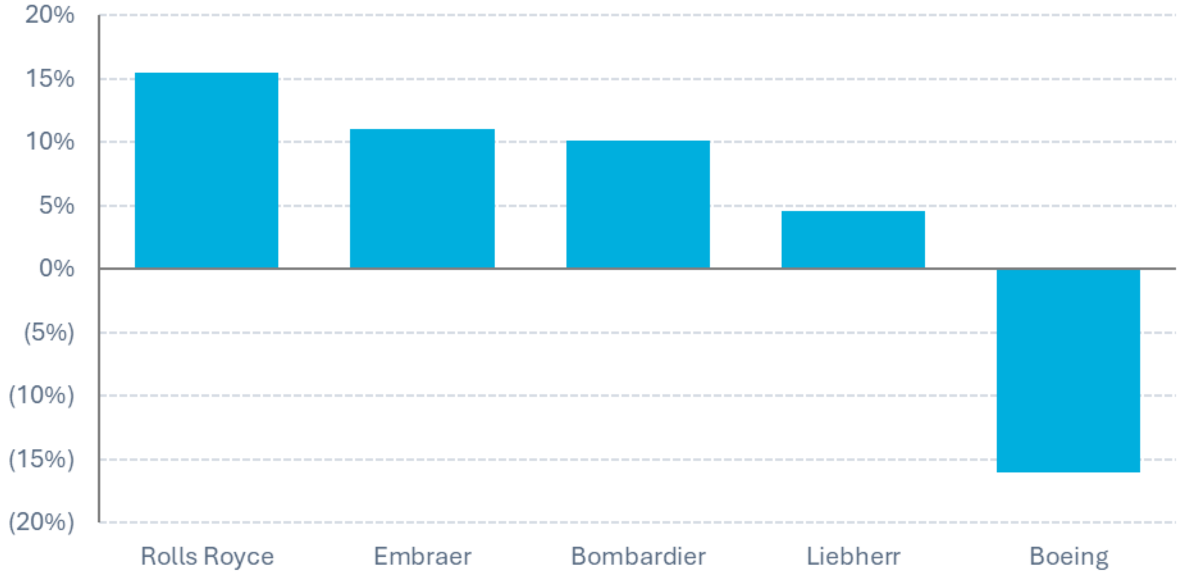
The charts below show the 2024 EBIT margins of the sample of EU and non-EU aerospace companies.

Figure A.10: 2024 EBIT margins of sample of EU aerospace companies



Source: 2024 financial statements, as outlined in Table A.5.

Figure A.11: 2024 EBIT margins of sample of non-EU aerospace companies

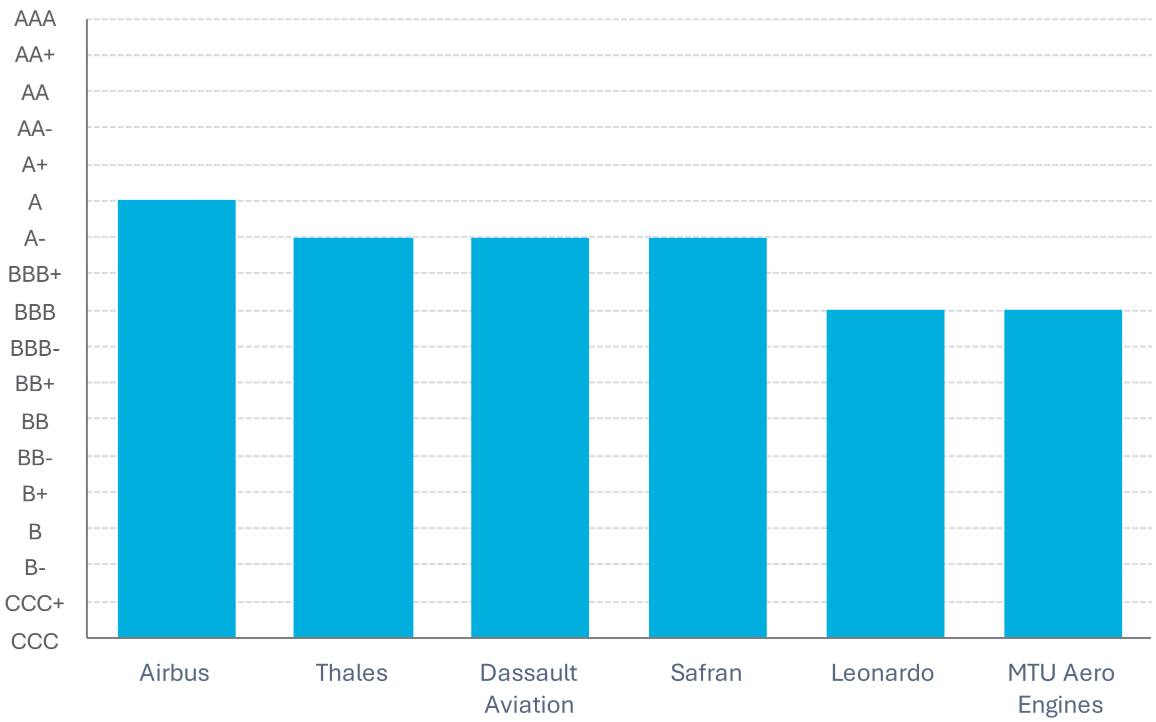


Source: 2024 financial statements, as outlined in Table A.6.

A.4.3. Access to capital (credit ratings) of sample of aerospace companies

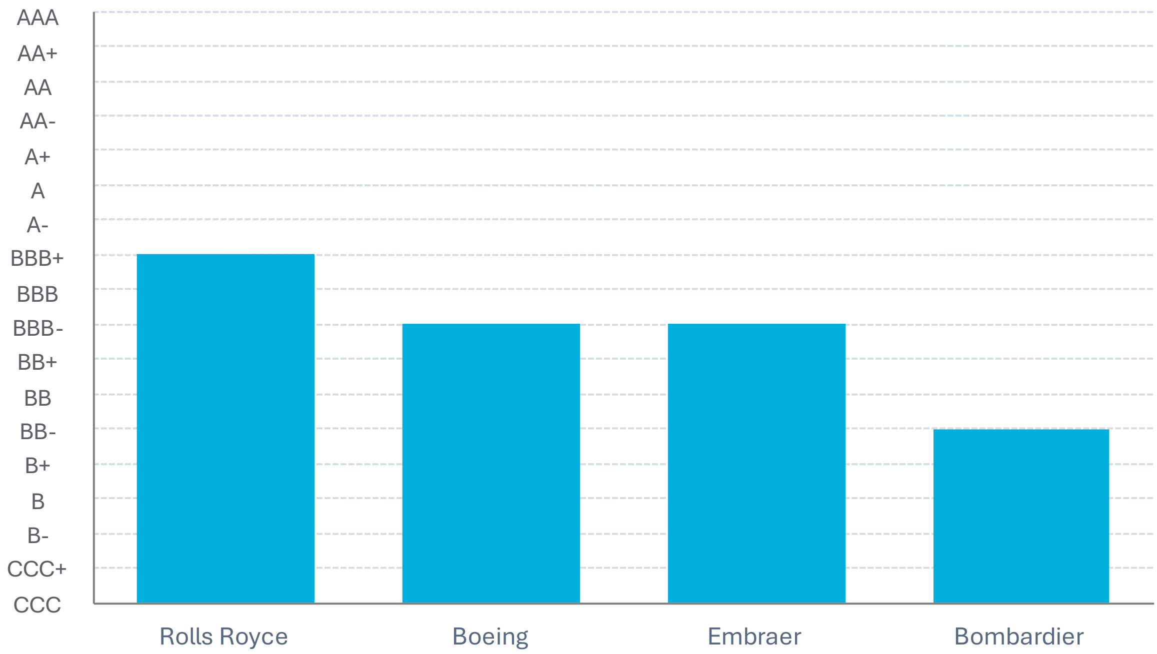
The charts below show the credit ratings of the sample of EU and non-EU aerospace companies. There are fewer aerospace companies in these charts than in the EBIT margin charts above, as fewer aerospace companies receive credit ratings on their debt than publish publicly-available financial statements.

Figure A.12: Credit ratings of sample of EU aerospace companies



Source: Moody's, S&P Global and Fitch Ratings.

Figure A.13: Credit ratings of sample of non-EU aerospace companies



Source: Moody's, S&P Global and Fitch Ratings.

A.5. ANSPs

A.5.1. Sample of ANSPs considered in financial analysis

The tables below show the EU and non-EU ANSPs considered in the EBIT margin analysis. These firms represent the ANSPs for which 2024 financial data is available from Eurocontrol's ANSP Financial Dashboard, which includes ANSPs in the EU and surrounding states. 2024 financial data was not available for other ANSPs worldwide.

Given that ANSPs are generally state-owned entities, credit ratings are not generally available for these firms, and hence no analysis of the credit ratings of the sample of ANSPs has been carried out.

Table A.7: Sample of EU ANSPs considered in analysis of aviation sector financial performance

ANSP	Description
ANS_CR	ANSP for the Czech Republic
AirNav_Ireland	ANSP for Ireland
Austro_Control	ANSP for Austria
BULATSA	ANSP for Bulgaria
DFS	ANSP for Germany
EANS	ANSP for Estonia

ANSP	Description
ENAIRE	ANSP for Spain
ENAV	ANSP for Italy
Fintraffic_ANS	ANSP for Finland
Hungaro Control	ANSP for Hungary
LFV	ANSP for Sweden
LGS	ANSP for Latvia
LVNL	ANSP for Netherlands
NAVIAIR	ANSP for Denmark
Oro_Navigacija	ANSP for Lithuania
Skeyes	ANSP for Belgium
Slovenia_Control	ANSP for Slovenia

Source: Steer analysis.

Table A.8: Sample of non-EU ANSPs considered in analysis of aviation sector financial performance

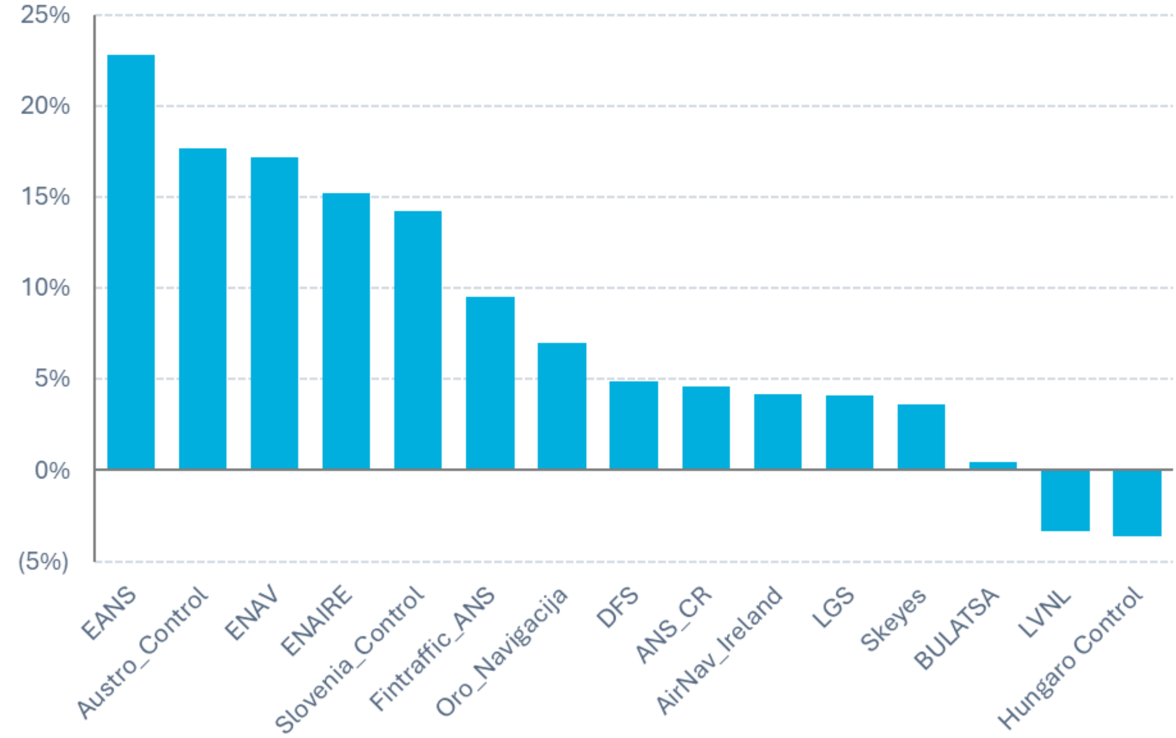
ANSP	Description
ARMATS	ANSP for Armenia
MOLDATSA	ANSP for Moldova
UkSATSE	ANSP for Ukraine
NATS	ANSP for the UK
Avinor Flysikring	ANSP for Norway
Skyguide	ANSP for Switzerland
DHMI	ANSP for Turkey
Sakaeronavigatsia	ANSP for Georgia

Source: Steer analysis.

A.5.2. Profitability (EBIT margins) of sample of ANSPs

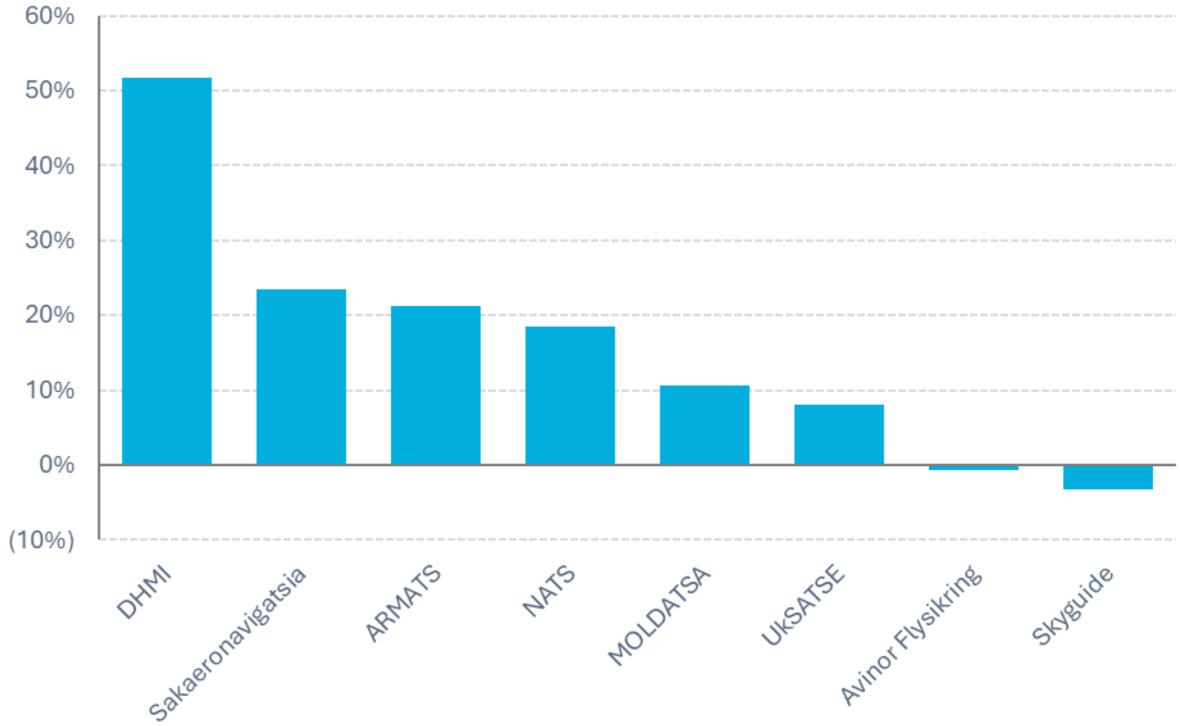
The charts below show the 2024 EBIT margins of the sample of EU and non-EU ANSPs.

Figure A.14: 2024 EBIT margins of sample of EU ANSPs



Source: 2024 financial statements, as outlined in Table A.7. Note: LFV and NAVIAIR excluded from chart to very low EBIT margins of *negative* 20.7% and *negative* 372.6% respectively.

Figure A.15: 2024 EBIT margins of sample of non-EU ANSPs



Source: 2024 financial statements, as outlined in Table A.8.

A.6. Ground Handling Service Providers

A.6.1. Sample of Ground Handling Service Providers (GHSPs) considered in financial analysis

The table below shows the EU and non-EU GHSPs considered in the analysis, along with a brief description of each of these, plus a link to their financial statements, which has been used to calculate these firms' EBIT margins. Due to limited publicly available information on the financial performance of GHSPs, the EU and non-EU GHSPs are considered together in this section. In total, there are only three GHSPs in the sample, and none of these have credit ratings associated with them. Hence, in this section, only the EBIT margins of these firms are analysed.

Table A.9: Sample of GHSPs considered in analysis of aviation sector financial performance

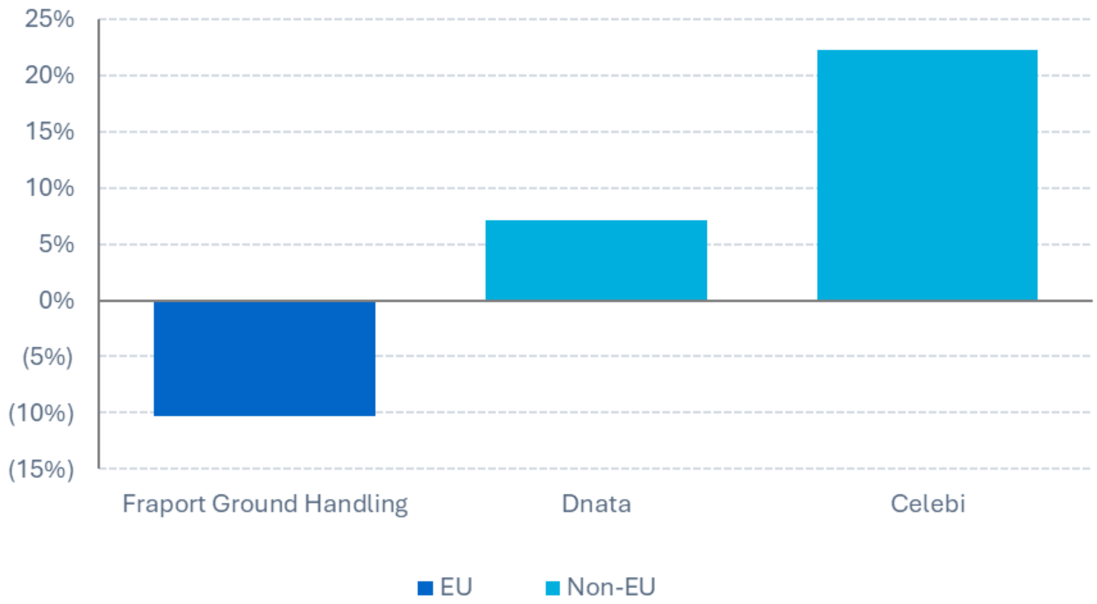
GHSP	EU / Non-EU	Description	Link to financial statements
Fraport Ground Handling	EU	German-based handler primarily at Frankfurt Airport (and group's airport network globally), serving numerous airlines in passenger, ramp, cargo and technical services at Frankfurt and associated Fraport airports.	Link
Dnata	Non-EU	Emirates Group's global ground handler, active across 84 countries, serving 300+ airlines at major hubs including Dubai, Geneva, Zurich, UK (Heathrow, Gatwick, Manchester).	Link
Celebi	Non-EU	Turkish ground handler operating in multiple countries (Turkey and expanding internationally) offering ramp, cargo and passenger handling to airlines at major airports; long-standing presence in Turkish airports and growing global footprint.	Link

Source: Steer analysis.

A.6.2. Profitability (EBIT margins) of sample of GHSPs

The chart below shows the 2024 EBIT margins of the sample of EU and non-EU GHSPs.

Figure A.16: 2024 EBIT margins of sample of EU and non-EU GHSPs



Source: 2024 financial statements, as outlined in Table A.9.

A.7. Aviation fuel companies

A.7.1. Sample of aviation fuel companies considered in financial analysis

The table below shows the EU and non-EU aviation fuel companies considered in the analysis, along with a brief description of each of these, plus a link to their financial statements, which are used to calculate these firms' EBIT margins. Due to limited publicly available information on the financial performance of aviation fuel companies, the EU and non-EU aviation fuel companies are considered together in this section. In total, there are only six aviation fuel companies in the sample.

Table A.10: Sample of aviation fuel companies considered in analysis of aviation sector financial performance

GHSP	EU / Non-EU	Description	Link to financial statements
Topsoe	EU	Danish technology provider enabling SAF production processes and catalysts; supports SAF manufacturing projects globally.	Link
NESTE	EU	Finnish energy company and leading SAF producer, supplying renewable jet fuel capacity in Europe and Asia.	Link
OMV	EU	Austrian oil & gas firm supplying jet fuel and developing SAF in Central & Eastern Europe, with strong regional supply chains to airports like Vienna and Munich.	Link

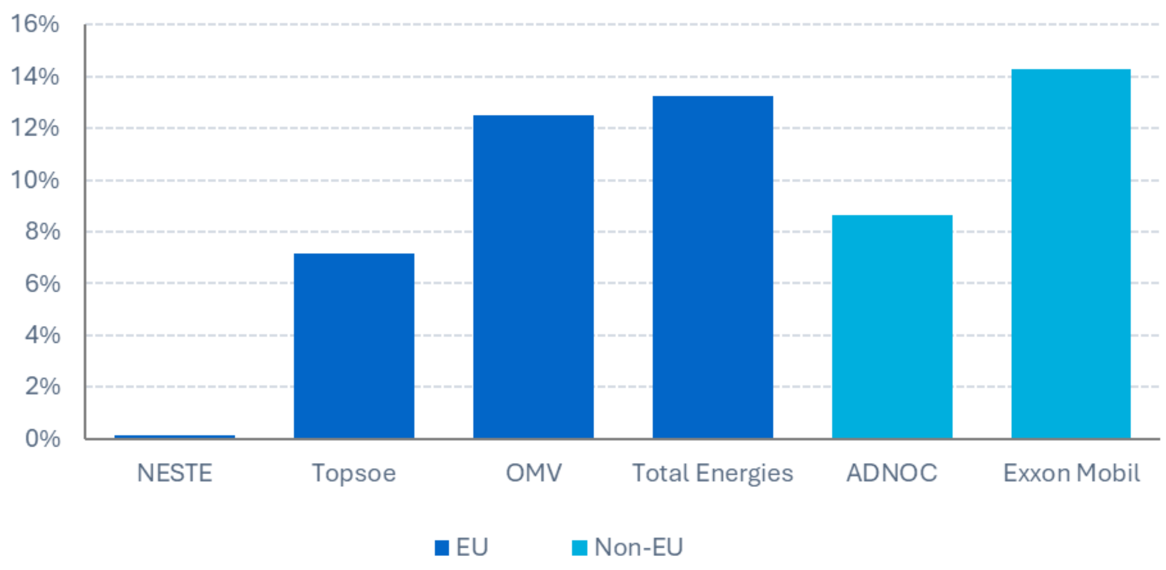
GHSP	EU / Non-EU	Description	Link to financial statements
Total Energies	EU	French supermajor producing and supplying conventional aviation fuel and SAF worldwide, with major European airport customers and partnerships with airlines like Airbus and Air France-KLM.	Link
Exxon Mobil	Non-EU	Global energy major refining and marketing jet fuel and investing in lower-carbon fuel technologies, serving airlines and airport fuel markets internationally.	Link
ADNOC	Non-EU	UAE state energy group supplying certified Jet A-1 and aviation fuels via downstream units across the Middle East and global trading channels.	Link

Source: Steer analysis.

A.7.2. Profitability (EBIT margins) of sample of aviation fuel companies

The chart below shows the 2024 EBIT margins of the sample of EU and non-EU aviation fuel companies.

Figure A.17: 2024 EBIT margins of sample of EU and non-EU aviation fuel companies

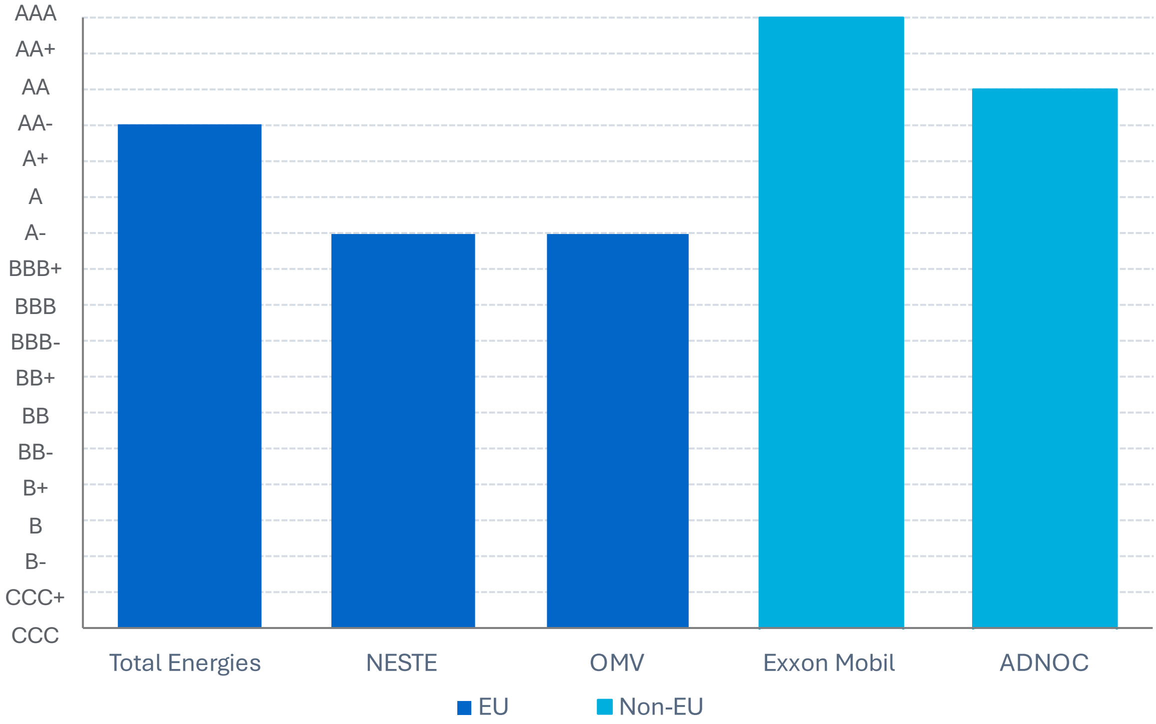


Source: 2024 financial statements, as outlined in Table A.10.

A.7.3. Access to capital (credit ratings) of sample of aviation fuel companies

The charts below show the credit ratings of the sample of EU and non-EU aviation fuel companies. There are combined into one chart, as with EBIT margins above.

Figure A.18: Credit ratings of sample of EU and non-EU aviation fuel companies



Source: Moody's, S&P Global and Fitch Ratings. NB: Data unavailable for Topsoe.

B. III: SUMMARY OF AVIATION REGULATORY FRAMEWORKS OF EU AND SELECTED THIRD COUNTRIES

Table B.1: Comparison of regulatory environments for EU and selected third country aviation sectors

Topic	EU	USA	China	Canada	Türkiye	Qatar
Aviation emissions trading	CORSIA (offsetting): voluntary until 2027 EU ETS: cap-and-trade system	CORSIA (offsetting): voluntary until 2027 No emissions trading systems including domestic aviation	CORSIA (offsetting): no voluntary participation, mandatory in 2027 China's ETS does not yet include domestic aviation; however some cities have trialled an ETS including the aviation sector (ATAG, 2024).	CORSIA (offsetting): voluntary until 2027 No emissions trading systems including domestic aviation[48]	CORSIA (offsetting): voluntary until 2027 No emissions trading systems including domestic aviation	CORSIA (offsetting): voluntary until 2027 No emissions trading systems including domestic aviation
Policies developing SAF production/ uptake	ReFuelEU Aviation: mandatory blending of SAF and e-SAF from EU airports	Incentive-based policies (tax credits, funding opportunities for SAF production) (IATA, 2022)	Target of 50,000 tonnes by 2025 (Sustainable Aviation Futures, 2025). No mandatory SAF target by 2030 (or beyond)	Indirect, incentive-based policy: carbon credits for SAF production or import available for its Clean Fuel Regulations, which does not	Since 2025, mandatory blending of SAF on international flights to meet a 5% reduction in emissions by 2030. Fuel suppliers and	No policy requirements specifically on SAF. Uptake is driven through international commitments such as CORSIA,

[48] Carbon pollution pricing is enforced since 2019 in Canada but does not cover inter-provincial flights (i.e. the majority of domestic aviation in Canada) (ICAO, 2022). Intra-provincial flights were also removed from the carbon pollution pricing in 2025 (Climate Action Tracker, 2025).

Topic	EU	USA	China	Canada	Türkiye	Qatar
			announced by China (Aizhu, 2025)	specifically cover aviation (ICAO, 2022).	producers in Türkiye are required to produce sufficient SAF, aiming to stimulate a domestic SAF industry (Reuters, 2025).	industry-led targets such as Qatar Airways' plan to use 10% SAF by 2030, and research and development into SAF production.
Aviation fuel taxation	None – Energy Taxation Directive revision blocked	Yes – used to partially fund air traffic control (US Congress, 2017)	None identified	Excise tax on domestic aviation fuel; federal carbon price is levied on jet fuel but SAF is exempt.	Special consumption tax on fuels also includes domestic aviation fuel	None identified
Monitoring, reporting and verification (MRV) of climate impacts	Yes - CO_2 and non-CO_2 impacts on the climate	Yes - CO_2 impacts on the climate only	Yes - CO_2 impacts on the climate only	Yes - CO_2 impacts on the climate only	Yes - CO_2 impacts on the climate only	Yes - CO_2 impacts on the climate only
Flight environmental labelling	Standardised emissions information available when booking flights	No requirement identified	No requirement identified	No requirement identified	No requirement identified	No requirement identified

Topic	EU	USA	China	Canada	Türkiye	Qatar
	based on real-world data					
Ownership and control of air carriers	At least 50% must be owned by EU nationals, and air carriers must be effectively controlled by EU nationals (Regulation 1008/2008)	At least 75% must be owned by US nationals, and air carriers must be effectively controlled by US nationals (GAO, 2019)	At least 75% must be owned by Chinese nationals, and air carriers must be effectively controlled by Chinese nationals (Lexology, n.d.)	At least 50% must be owned by Canadian nationals, individual foreign investors can only control up to 25% of voting shares (Canadian Transport Agency, n.d.)	At least 50% must be owned by Turkish nationals and air carriers must be effectively controlled by Turkish nationals (Erten Partners, n.d.)	No specific legislation identified, but Qatar Airways is 100% state-owned.
Ownership of airports	Mixture of public and private ownership (Steer Davies Gleave, 2016; Simple Flying, 2025)	Mostly publicly owned	Mostly publicly owned	Mostly publicly owned	Publicly owned with extensive use of PPP and concessions	Publicly owned
Economic regulation of airports	Strong formal regulation (Airport Charges Directive), including price caps and independent oversight	Light-touch regulation, mainly based on agreements between stakeholders with dispute resolution if required; some	None – aeronautical charges set by government/ regulator in accordance with ICAO principles.	None – aeronautical charges set by government/ regulator in accordance with ICAO principles.	None – aeronautical charges set by government/ regulator in accordance with ICAO principles.	None – aeronautical charges set by government/ regulator in accordance with ICAO principles.

Topic	EU	USA	China	Canada	Türkiye	Qatar
		examples of rate-of-return regulation				
Ownership of ANSP(s)	Mostly publicly owned and corporatised, some privatisation (EUROCONTROL, 2024)	State-owned (Federal Aviation Authority)	State-owned (Civil Aviation Administration of China)	Privately owned (NAV CANADA)	State-owned (DHMI)	State-owned (Qatar Civil Aviation Authority)
Economic regulation of ANSPs	Single European Sky – binding cost-efficiency targets annually	None – ANS charges set by government	None – ANS charges set by government	Light-handed (such as dispute resolution over charges)	None – ANS charges set by government	None – ANS charges set by government
Passenger rights framework	Mandatory compensation for delays within the airline's control, cancellations and overbooking; meals and refreshments, accommodation and transport if required; full refunds, rebooking or alternative transport;	Refunds for cancellations and long delays (compensation is at the discretion of airlines); compensation for overbooking, lost luggage; no charge for seating children with parents. (US Department of	The Chinese legislation sets out airlines' obligations on maintaining flight regularity and providing services in case of delay and cancellation. The Regulation does not include information on denied boarding, nor does it offer	Mandatory compensation for delays within the airline's control, cancellations and overbooking; meals and refreshments, accommodation if required; full refunds or rebooking available to passengers; compensation for	Turkish legislation establishes mandatory compensation for delays within the airline's control, cancellations and overbooking; meals and refreshments, accommodation and transport if required; full refunds, rebooking	Qatari legislation establishes rebooking or refunds for overbooking, cancellations, and delays plus meals, refreshments and accommodation if required. Compensation is at the discretion of airlines.

Topic	EU	USA	China	Canada	Türkiye	Qatar
	compensation for lost luggage. (261/2004)	Transportation, n.d.)	compensation in addition to reimbursement.	lost luggage. (Canadian Transportation Agency, n.d.)	or alternative transport; compensation for travel class downgrade.	
State aid rules	Generally prohibited, unless it is declared compatible with the internal market, and does not distort competition (European Commission, n.d.). Fair competition clauses in bilateral agreements and Regulation 2019/712 also aim to prevent competitive distortions arising from State aid.	No specific restriction; State aid is policy-driven focused on connectivity and employment rather than market distortion. Also governed through fair competition clauses in bilateral agreements.	No specific restriction; State aid governed by general competition law, aid is often ad-hoc or for strategic investments. Also governed through fair competition clauses in bilateral agreements.	No specific restriction; State aid governed by general competition law and sector-specific law. Also governed through fair competition clauses in bilateral agreements.	No specific restriction; State aid governed by general competition law and sector-specific law. Also governed through fair competition clauses in bilateral agreements. Some alignment with EU policies as a candidate country, but this is not binding.	No specific restriction; State aid governed by sector-specific law. Also governed through fair competition clauses in bilateral agreements.

Source: Steer analysis.

This study examines the **competitiveness of the EU aviation sector** both internally and versus comparator third countries, highlighting its **current strengths and weaknesses** and **likely future developments**. The study encompasses the entire aviation value chain and also assesses the **working conditions** in the sector. It identifies a set of **recommendations paving the way towards a strategic action plan for the EU aviation sector**, which aim to **maintain and improve the competitiveness of EU aviation** in the medium- to long-term.

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